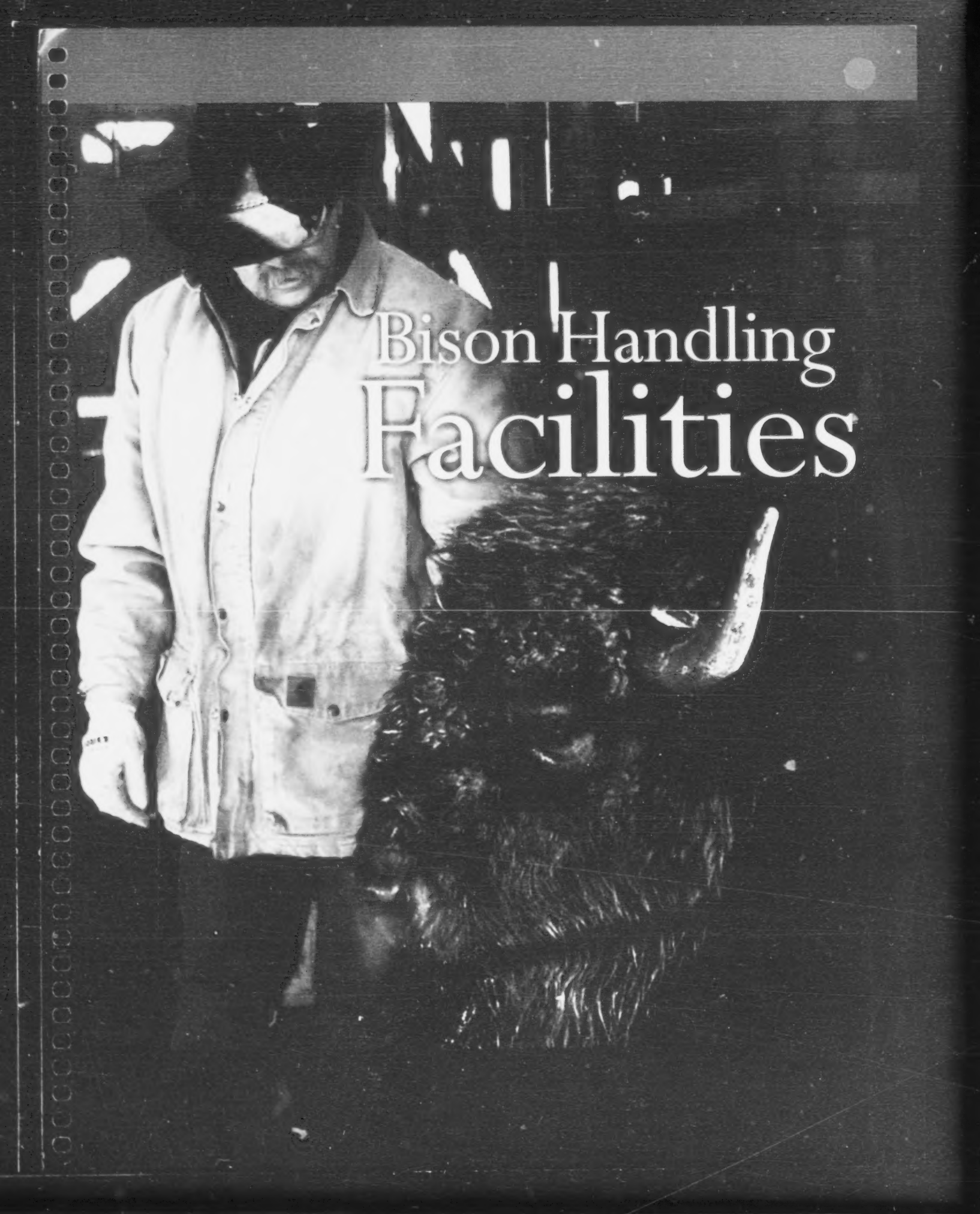

Bison Handling Facilities

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Bison Handling Facilities

Written By: Gerald Hauer, DVM and Larissa Helbig, B.Sc.

Published by:

Alberta Agriculture, Food and Rural Development
Information Packaging Centre
7000 - 113 Street
Edmonton, Alberta
Canada T6H 5T6

Editor: Dave Orey
Graphic Designer: John Gillmore
Page Production: Sherrill Strauss

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ISBN 0-7732-6072-2

Copies of this publication may be purchased from:

Publications Office
Alberta Agriculture, Food and Rural Development
Phone: 1-800-292-5697 (toll free in Canada)
(780) 427-0391
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Acknowledgements

The authors would like to thank the bison producers who made their handling facilities and knowledge available to help with the creation of this book. The producers involved in this project were: Bill Bilan, Parklane Holdings; Marcel Smith, Hotwire Bison Ranch; Cliff Begg, Sun Creek Ranches; Rick Reid, New Horizons Beef and Bison; Paul and Perry Kolesar; and, Dean Andres.

The authors are also grateful to Dennis Darby, P.Eng. and Wayne Winchell, P.Eng. for the technical development of the diagrams found in this book.

Individuals who provided reviews of draft documents were Cathie Ericksen-Arychuk (Alberta Agriculture, Food and Rural Development) and Dr. Roy Lewis.

The authors would also like to thank Morand Industries Ltd., Wes Olson of Elk Island National Park and Beaver Creek Wood Bison Ranch for contributing several of the photographs used in this book.

Photo courtesy of Beaver Creek Wood Bison Ranch

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Introduction

Commercial bison ranchers must have the ability to collect, segregate and confine their animals for a number of reasons. It may be for routine vaccinations and deworming, ear-tagging, herd testing or sorting. In order to safely and effectively handle bison, the rancher must be knowledgeable about bison handling techniques and have an adequate handling system.

Proper handling techniques combined with a good facility design will:

- increase the safety for operators and animals, and decrease the chance of injury to both
- reduce stress on the animal
- reduce the handling time

A detailed explanation of bison handling techniques is available elsewhere. Alberta Agriculture, Food and Rural Development has a video titled *Handling Bison – Safely and Effectively*. See the back of this booklet for a list of resources about handling bison.

This booklet helps you design a facility that is right for you, considering some of the following:

- size of your herd
- layout of existing facilities and natural land contours
- personal preferences
- resources

This publication looks at bison behaviour and how a good handling facility is designed with this in mind. It then describes how to design your facility, gives you some examples of bison handling facilities and describes how to build the components of the facility.

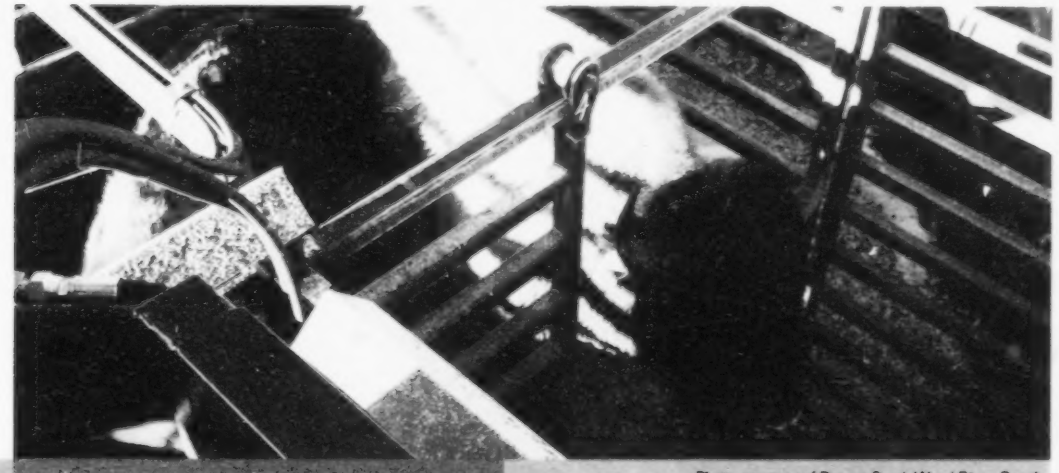


Figure 1. A bull in a wide box crowding alley.

Photo courtesy of Beaver Creek Wood Bison Ranch

Bison Behaviour During Handling

Why Bison Act as They Do

Bison have not been domesticated for very long. They maintain many of the survival instincts of their ancestors from wild herds that once roamed the Prairies. Once the target of hungry wolves and bears, bison still think like a prey animal. Because of these instincts bison developed certain behaviours that surface when being handled.

Even though bison can appear quite tame in the pasture or in other familiar surroundings, they can act quite wild when being handled. For this reason, it is important to design your handling facility with the following basic bison instincts in mind.

If they have a chance, bison will flee from perceived threats. Their first defense is to run away from anything that frightens them. If their escape route is blocked they will turn and fight in order to survive, or they may run over you or anything else that is blocking their route to freedom.

Bison believe in safety in numbers. They would rather be in a group than by themselves. In a large group, an individual bison is less likely to be picked by a predator for a meal, and therefore feels safer. If bison are separated from their herd, they will try to get back to it.

Bison try to return to where they came from. If placed in an uncomfortable situation, they try to return to the area where they feel more comfortable. This tendency can be effectively used in the design of a handling facility.

A bison herd tends to circle when it is looking for an escape route. Again, this tendency can be used to your advantage when designing a handling facility.

Shadows and lighting are also important considerations when designing a facility. Bison tend to move from areas of low light to those of higher light. If they are in a bright area, a dark alley or squeeze might look like a hole from which they will never come out. If you are planning to put your facility inside a building, make sure that the entrance used by the bison is large enough and that the building is light enough that the bison will not hesitate to go in. Watch for obscure shadows when building a facility. To a bison, a shadow on the ground may look like a deep hole.

Bison are more apprehensive when surrounded by contrasts such as light/dark or shiny/dull. Making the inside of your facility a dull (not shiny), continuous colour makes the movement of animals easier.

Flight Zone

It is important to understand the flight zone of the animal and its implications on handling and handling facility design.

The flight zone is the bison's personal space and comfort zone. If you move into its flight zone, the bison moves away in an attempt to keep a safe distance from you. The size of a bison's flight zone depends on several factors such as:

- temperament – Nervous animals have a large flight zone.
- familiarity with the situation – Bison don't like novelty, especially when it is forced upon them.
- state of excitement – The flight zone for bison is smallest when relaxed, but becomes larger as they become more excited, such as during handling.

Just like the individual, a group of bison also has a collective flight zone. By working on the edge of the flight zone, a bison handler can gently push (herd) the bison in the desired direction. If you enter the flight zone too quickly or too deeply, bison are likely to panic and run away.

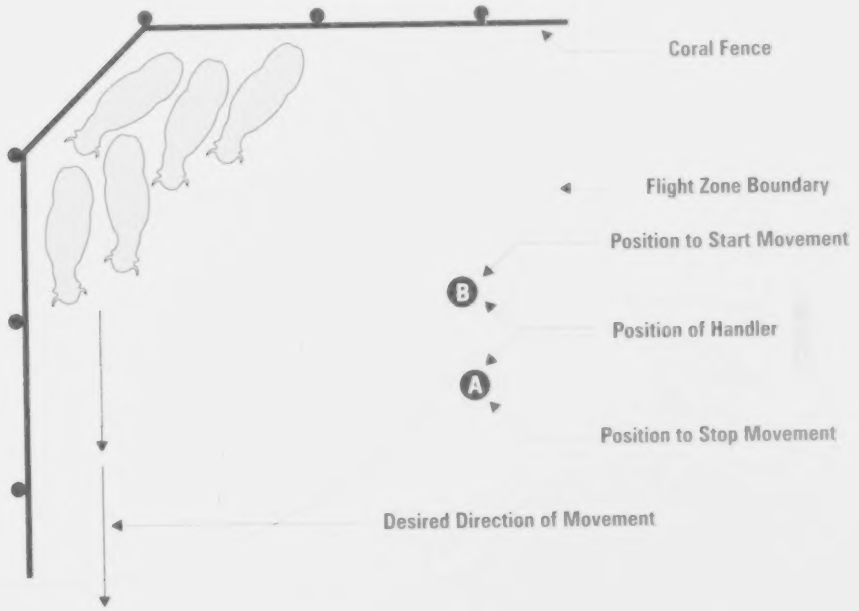


Figure 2. A diagram showing flight zone.

Point of Balance

Another characteristic of bison is called their point of balance. If you enter a bison's flight zone and they can't turn to run away (if they are in a single file alley or squeeze), they will still try to get away from you. If you approach them in front of their shoulder, they will back up. If you approach them from behind the shoulder, they will move forward.

Tips for Handling Bison

handle bison slowly and quietly to keep them as calm as possible

use minimal pressure to move bison in the desired direction – work at the edges of the flight zone

use lighting to your advantage as bison tend to move better from areas of low light to areas with better lighting

break a herd into small groups as separating small groups out of a large herd is a better than putting a large number of animals into a small pen

separate your bulls and older cows from the main group as early as possible as they tend to be the most aggressive with herd mates in confined situations

do not handle a bison herd when the calves are young because they are at a high risk of injury

think of safety – your facility design and handling technique should never put you in danger

do not work bison inside a pen unless you have an escape route and the bison have the ability to move away from you

be wary of bottle-fed bison during handling because they may be unpredictable

do not separate individual bison from the group for too long as bison like to be with the herd

separate individual bison just before the squeeze and then return them to their herd mates as soon as possible

do not overcrowd bison

do not use stock prods as these may make bison more frightened. Bison react differently to stock prods than cattle do. When confined in small spaces bison will generally face a threatening stimulus such as a stock prod.

Components of a Handling Facility

Designing a new bison facility is a little bit like putting together a puzzle. There are several main components or pieces that should be incorporated into your plan. There are a few styles of each component. You select the style of the components that work best for your farm, considering the space and resources you have available, and your personal preferences. Once you have selected the components, you fit them together into your plan for a handling facility.

It is a good idea to visit a few bison farms while you are planning your facility. This allows you to see some facilities and talk to other bison producers about what works well for them and what doesn't. You might even ask if you can help out the next time they handle bison. That type of experience gives you a feel for what is involved. By visiting a few bison operations you will be able to pick the components that you feel will work best on your ranch. Your regional bison association is a good contact for finding out the names of bison producers in your area.

Every bison handling facility looks different on the surface, but when you break each one down into components, they start to look the same. Different facilities have many of the same components put together in different ways.

Basic components of a bison handling facility include a catch pen, a cutting pen, a crowding alley, a scale (optional), a squeeze, a load out area and sorting pens. Although every facility is different, most incorporate a variation of these components.

Catch Pen

This pen is used to gather the bison from the pastures before they are handled. The catch pen should be large enough for the bison to enter readily with a little coaxing. It is important that this pen is large enough to allow the whole herd to enter and feel comfortable, without being crowded. Usually the animals are fed or watered here on a routine basis, and are accustomed to coming into the pen. To catch them, the farmer coaxes them in with feed or water and then simply closes the gate after they have entered.

While the catch pen must be large enough to safely hold the whole herd, it must also be small enough that bison can easily be herded into a cutting pen or crowding alley. The following are some important factors to consider when designing this pen.

• Pen Size

The following table is a guideline to use when deciding how big to make your pens. It is always a good idea to think about future expansion. If you want to increase the size of your herd, think about how you can easily make your catch pen larger to accommodate more bison.

Table 1. Suggested minimum space allowance for a catch pen (ft^2/unit)

Animals	Catch Pen
Cow/Calf pairs	250 square feet
Mature cows	200 square feet
Yearlings	125 square feet
Calves	125 square feet

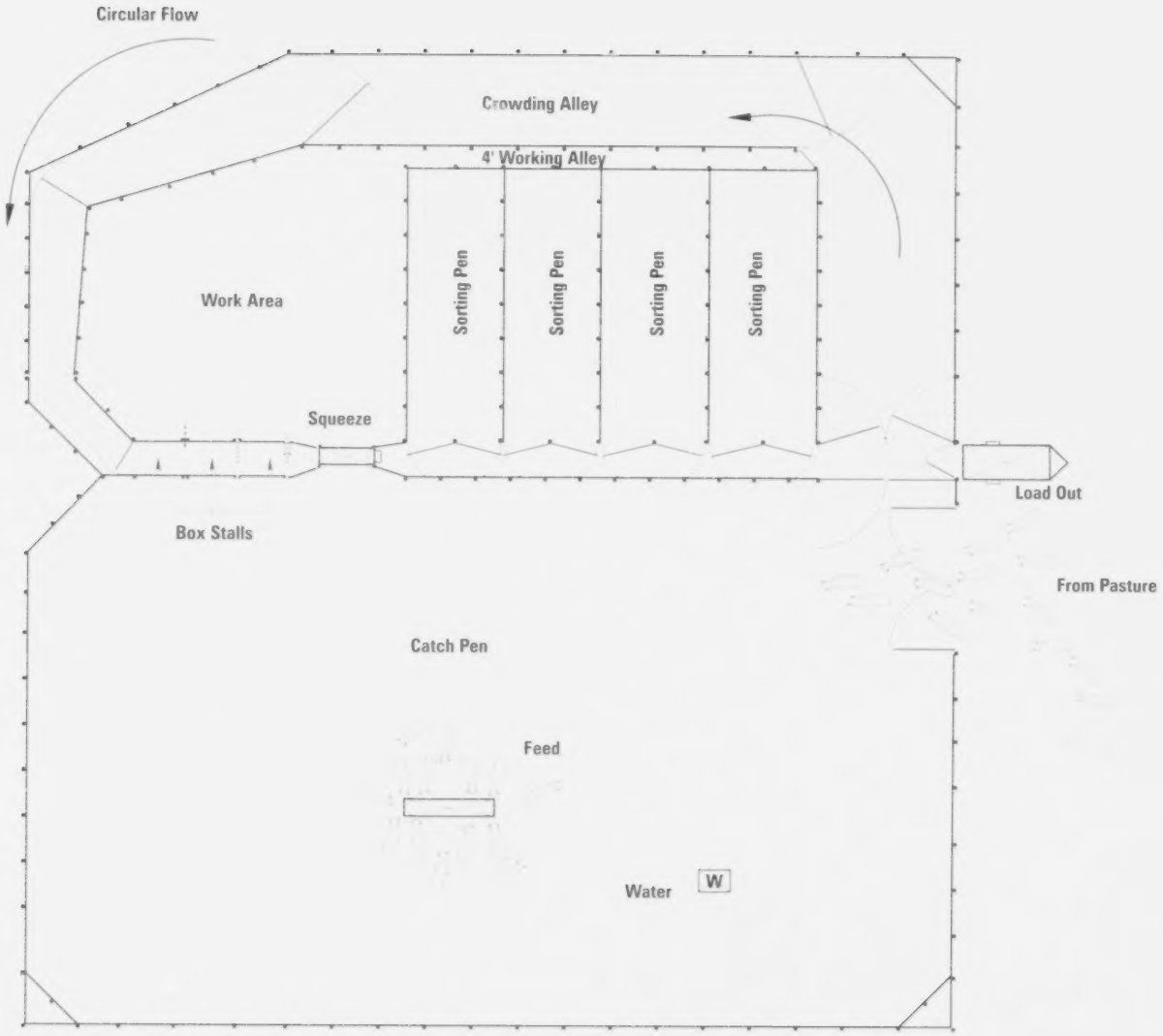
• Pen Shape

Shape the pen so it allows easy herding into the cutting pen or crowding alley. Tapered or funnel shaped pens help. Wing fences built into the pen can also help.

• Gate Location

Try to put the exit gate in a location that the bison want to go. Bison like to go to where they feel safe and this is usually where they just came from. Using the same gate for an entrance and an exit is a common practice. The gate is simply set differently so that the bison enter the cutting pen or crowding alley rather than returning to pasture. This fools them into thinking that they are going back to where they came from.

Figure 3. A catch pen showing the entrance into a crowding alley that leads to the handling facility in the background.



Facility Components | **Figure 4.** Catch pen.

Cutting Pen

Once the bison are gathered in the catch pen, they need to be herded either into a crowding alley or cutting pen before they are worked through to the squeeze.

Small groups of bison are easier to work than large groups. Several groups of 10 are easier to deal with than one group of 50. Small herds can be moved directly from the catch pen into the crowding alley. Larger herds usually have a cutting pen that is separate from the catch pen because the catch pen is too large to effectively cut out small groups of bison.

If needed, a cutting pen can be placed before the crowding alley. In a properly designed cutting pen, an experienced handler can cut out small groups of bison and herd them into the crowding alley. When these animals have been dealt with, another group is herded into the crowding alley. This is repeated until all the bison have been worked through the handling facility.

Sharp or square corners should be avoided in the cutting pen. Because bison tend to circle when pressured, they can bunch up in corners and injure each other if given the chance. Round cutting pens work well, but cutting off the square corners with planks works well too.

Figure 5. A round cutting pen. The gate leads from the cutting pen into the crowding alley.

Just like the catch pen, the cutting pen should be designed so that the bison can easily be herded through the desired gate and into the crowding alley. Attention must be paid to the size and shape of the pen, as well as gate locations.

- **Pen Size**

  The pen should be large enough so a person can safely work with the bison while on foot inside the pen, but it should be small enough that the bison feel pressured to leave through the gate.

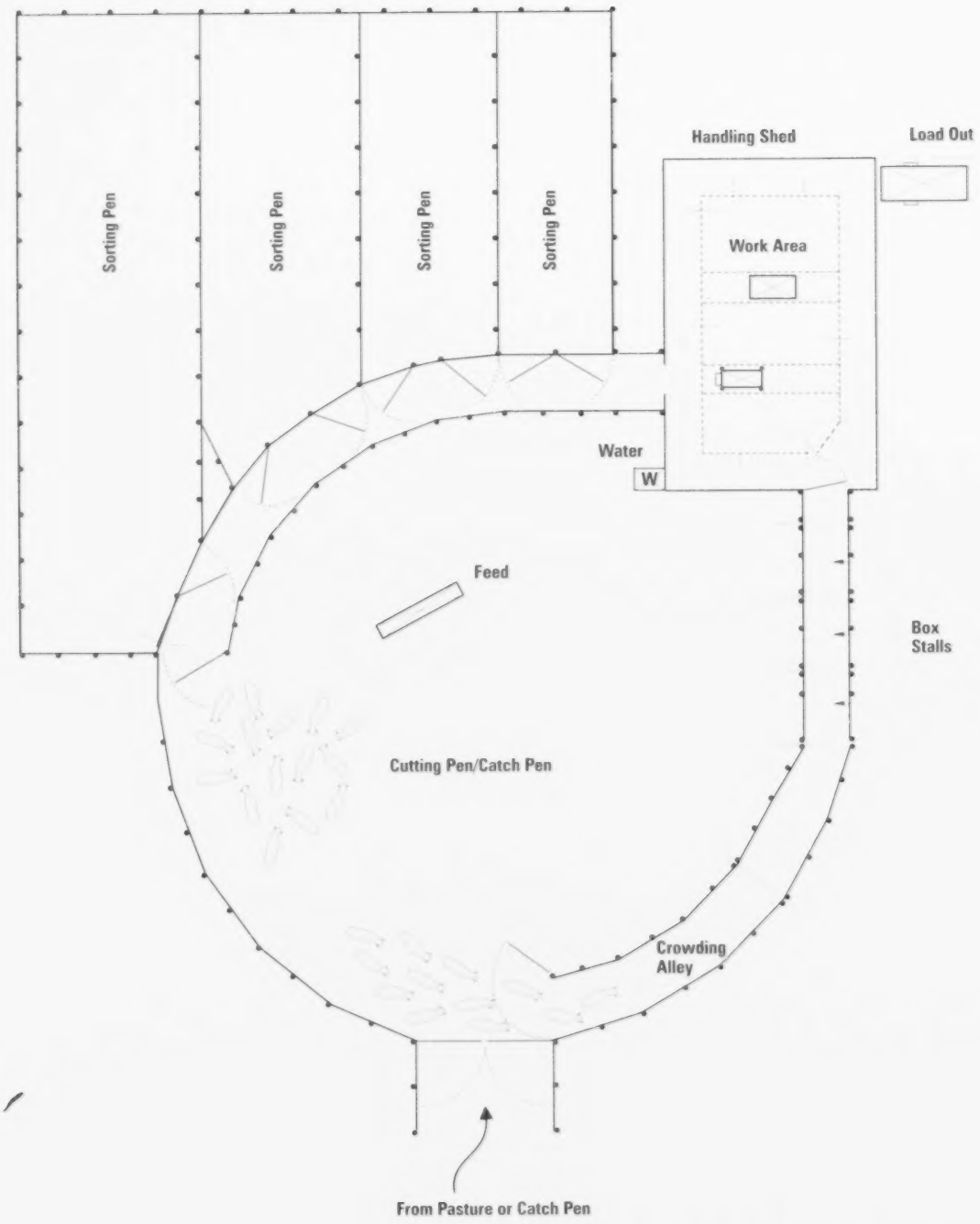
- **Pen Shape**

  The pen shape should allow animals to be easily herded out the intended gate. Square corners should be avoided in the sorting pen. Bison bunch up and injure each other in square corners when pressure is applied to the group.

- **Gate Location**

  As with the catch pen, the gate should be in a location where the bison want to exit. Remember, bison like to return to where they have come from.

Figure 6. Avoid square corners in a handling facility as they increase the possibility of bison getting trapped and injured.



Facility Components **Figure 7.** Round cutting pen.

Crowding Alley

The crowding alley leads up to the squeeze. In this alley, bison are moved towards the squeeze and are divided into smaller and smaller groups as they progress through. The goal is to have them enter the squeeze individually in a controlled manner.

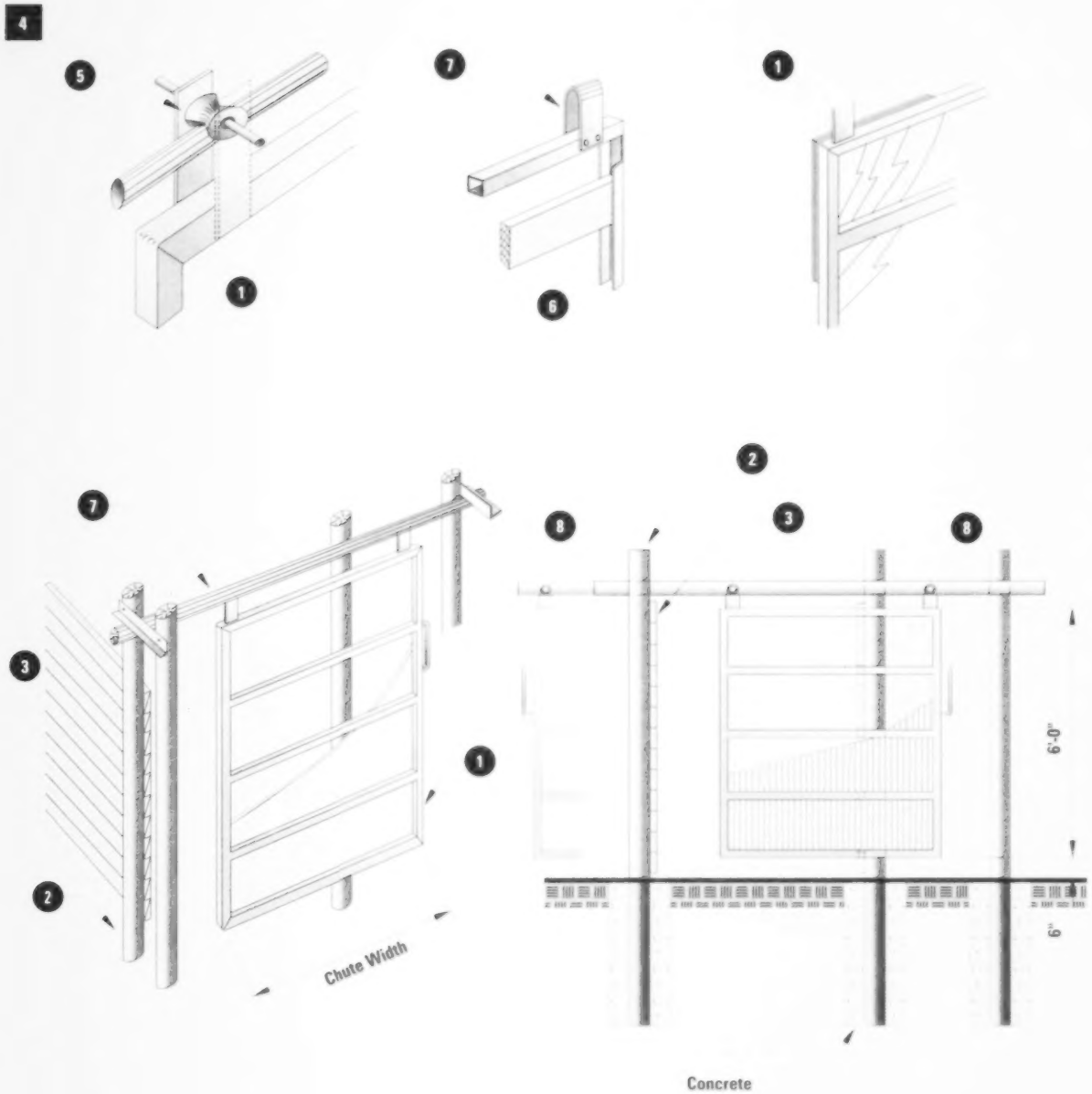
The entrance to the alley should be wide enough that bison can easily enter as a group. Gates within the alley are used to separate them into smaller groups as they get closer to the squeeze. Depending on the width of the alley, this can be accomplished with either sliding or swinging gates. Sliding gates become heavy and difficult to operate in alleys wider than six feet. Therefore, swinging gates are commonly used in parts where alleys are wider than six feet.

Swinging gates in alleys should be designed to close against the animal flow. This is to prevent bison from inadvertently closing the gate as they pass and to prevent injury if they try to squeeze through a partially open gate.

The crowding alley can be divided into two parts. The first part is wide (six feet or more) with swing gates further apart. It is used to progressively divide large groups of animals into smaller groups. By the time animals reach the second part of the crowding alley they have been separated in to groups of two or three animals. Here the alley gets narrower (six feet or less) and gates switch from swing gates to sliding gates that are spaced eight to 10 feet apart. It is in this last section that animals are individually separated.

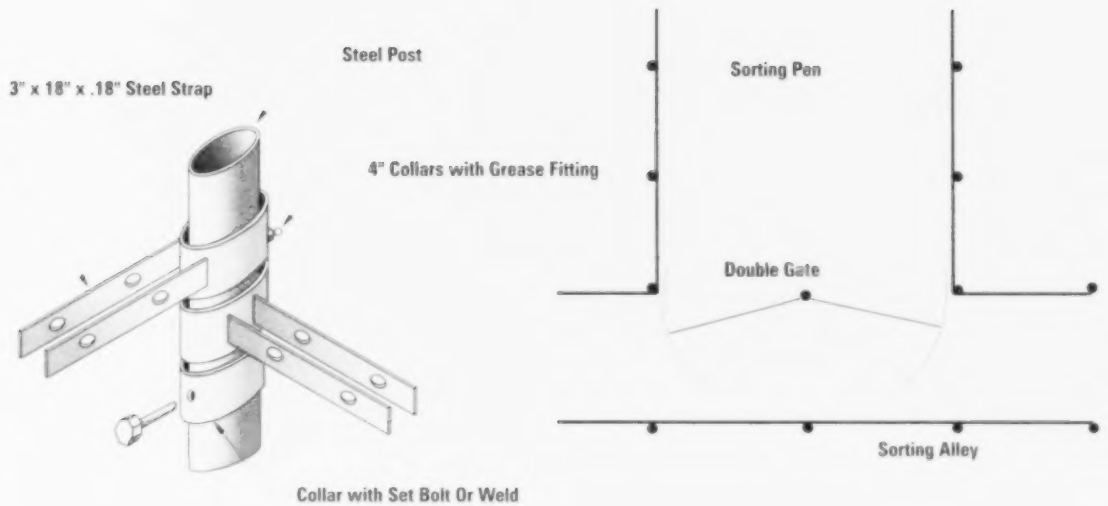
The second part of the crowding alley can be one of two designs; single file or wide box.

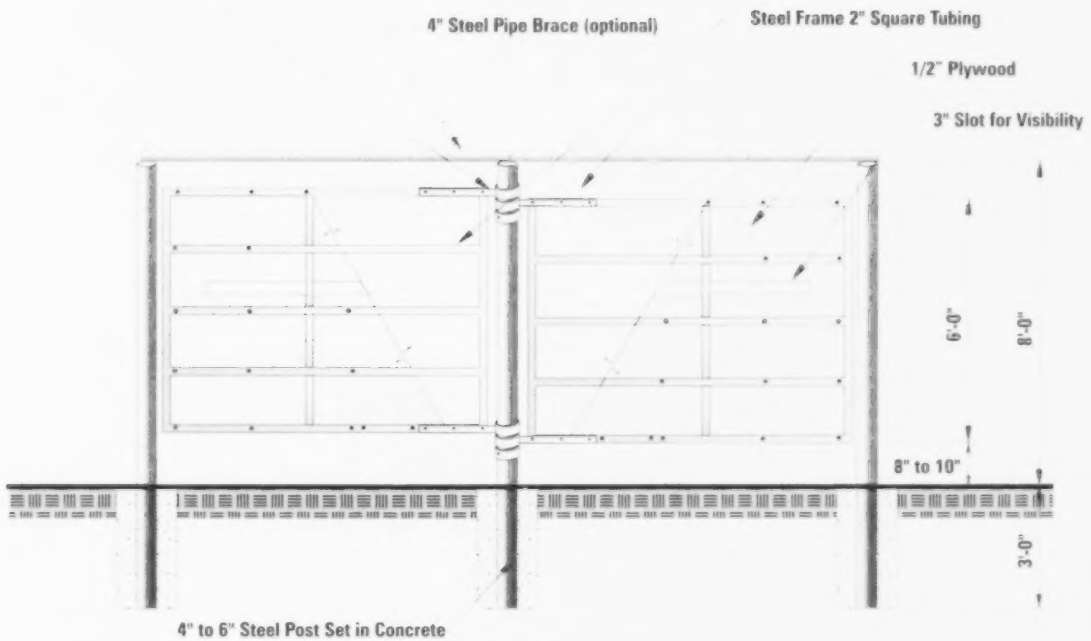
Figure 8. One section of a single file alley leading into a squeeze. Bison do not like to be in isolation with restricted movement for a long period of time. Keep single file alleys short.



1. Frame, 2" x 15" steel, 19 mm plywood
   Attached to front side with self-tapping screws
2. 6" pressure treated or steel post either side of 1
3. Working chute
4. Construction and track options
5. Boat skid pulley on a heavy pipe
6. Channel frame with removable planks
7. Ball-type door track, roller pulley on pipe, or strap over a greased pipe
8. Gate may be either pushed or pulled

Facility Components | **Figure 9.** Sliding gate.





Facility Components | **Figure 10**. Double swing gate (can also be a single swing gate).

- **Single File Alley**

  This type of alley is based on the cattle handling facility design. They can be used effectively in bison handling facilities, but a few things must be kept in mind:

  - Bison don't like to stand alone in line for long periods of time. For this reason, single file alleys should be kept short. Lining up a row of bison in narrow stretches of alley and making them wait their turn is not a good idea as they may flip over backwards or try to jump out.
  - Bison tend to go through an alley at a run. By keeping the alley short and using sliding gates to stop them before the squeeze, bison are prevented from running into the headgate at full speed.
  - Some producers incorporate a crowding tub into their single file alley. One successful tub design uses the bison's desire to return back to where they just came from. The entrance and exit of the tub are located in the same corner. By switching gates at the appropriate time, the bison thinks it is returning to the herd, but it is really headed for the squeeze.

Figure 11. A handling facility incorporating a quarter crowding tub and a single file alley.

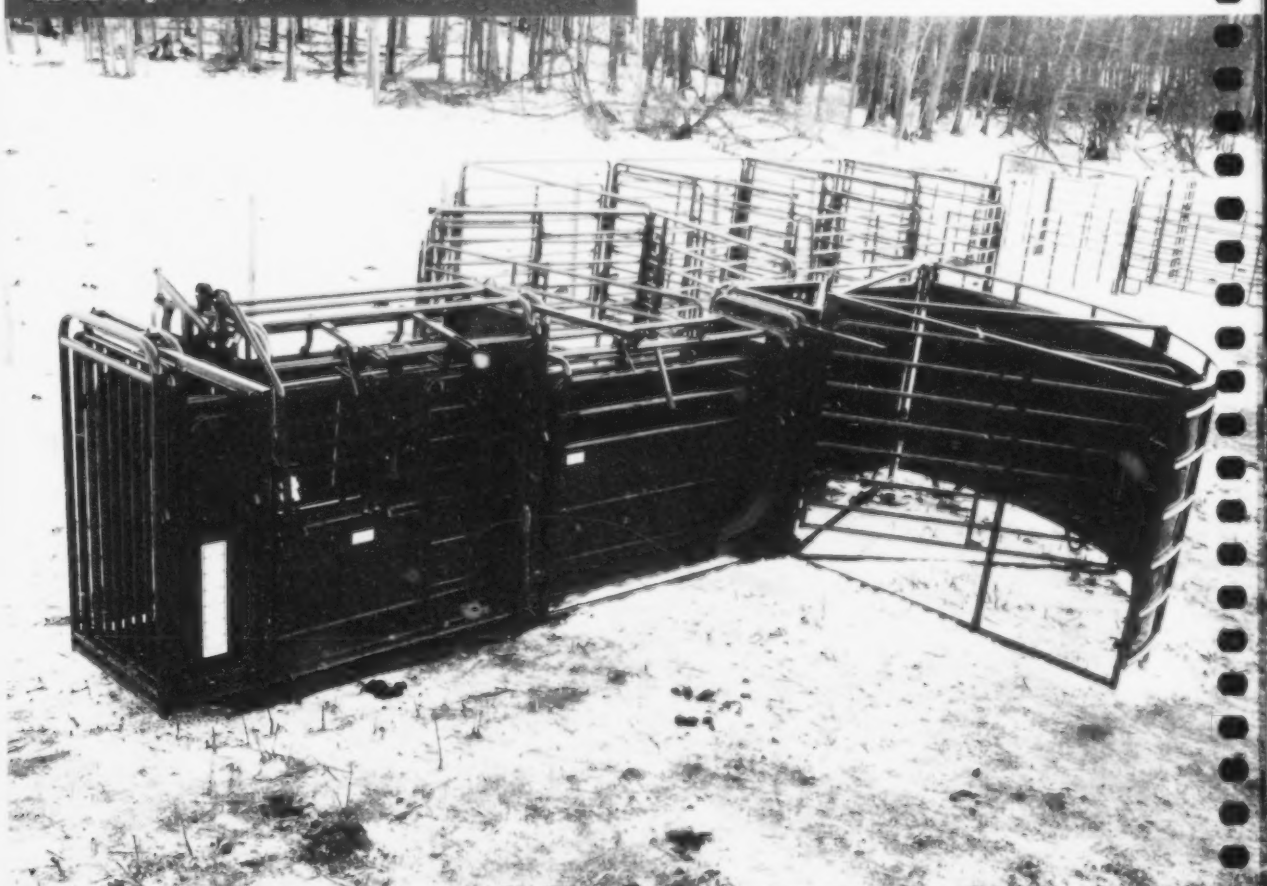


Photo courtesy of Morand Industries Ltd.

Wide Box Alley

A newer design for bison is based on the wide box alley design used by the elk industry. The second part of the crowding alley is a series of square boxes that are five to six feet wide and eight to 10 feet long, with sliding doors that separate the animals. Five-foot alleys work well except when handling large bulls. These may have difficulty turning around in that width and the idea with this design is to give enough room for the animal to turn freely around. They can spin around as much as they like without injuring themselves. Depending on animal size, one or two animals can be placed in each box, thereby preventing isolation from herd mates for too long before entering the squeeze. When it is time to move them forward, the sliding gate is opened and with a little coaxing, they move forward into the next box. The last box before the squeeze narrows to funnel the bison into the squeeze.

Figure 12. A crowding alley leading into a wide box alley. The closed slider is the opening to the first section.

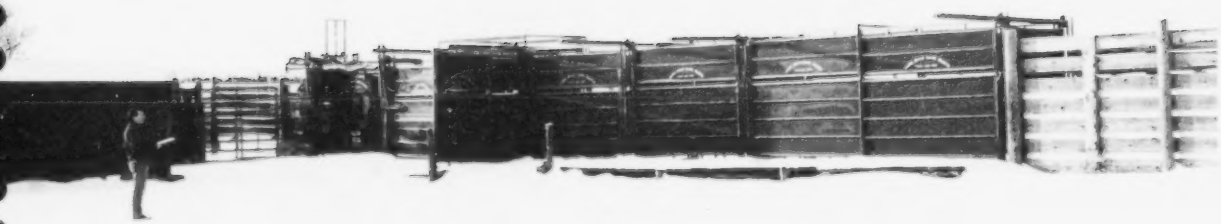


Figure 13. A wide box alley leading up to the squeeze. Several boxes allow handlers to separate animals without restricting movement. Most animals can turn around in these boxes. Two smaller animals can be held in each section to avoid isolation for long periods of time before entering the squeeze.

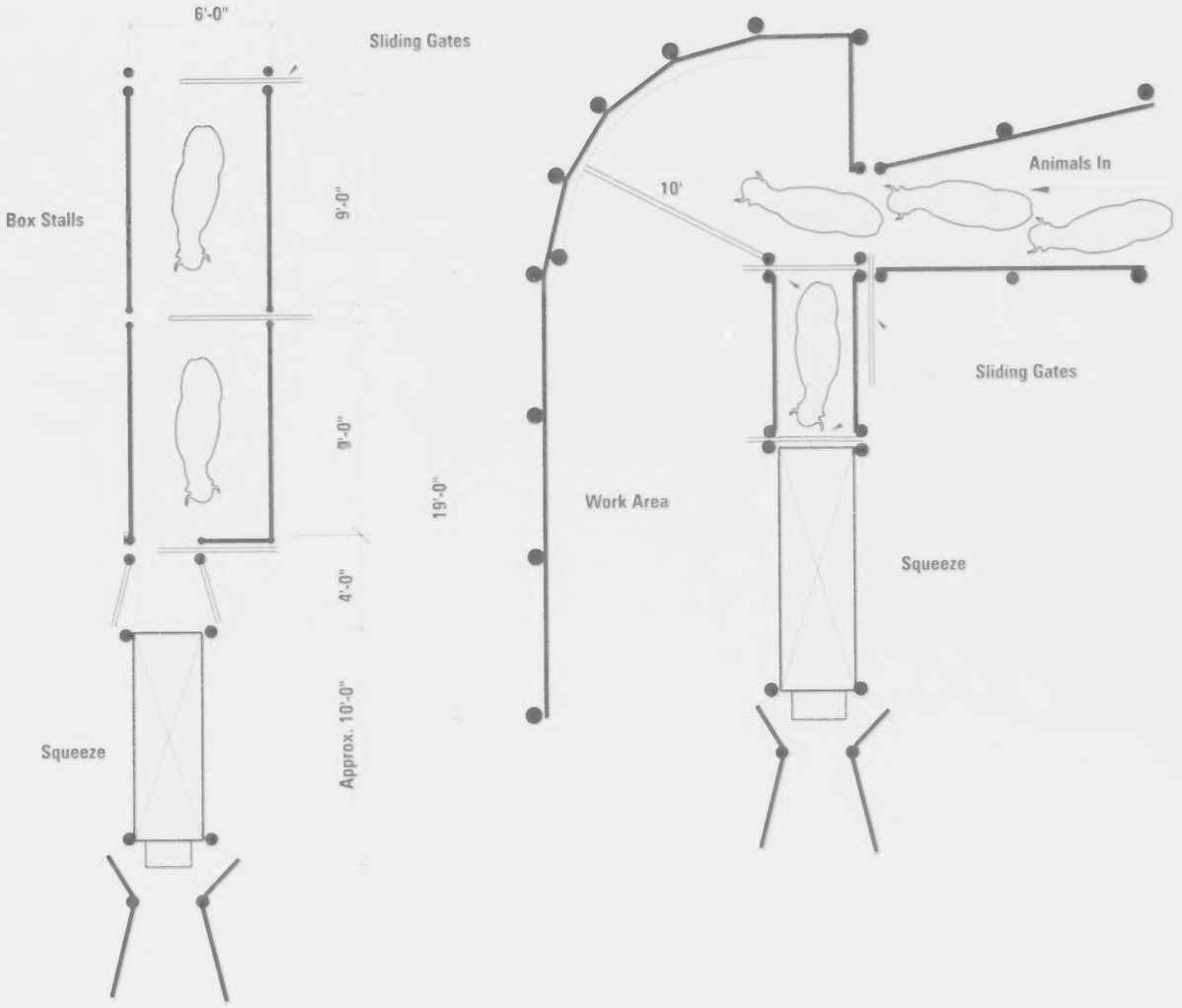


Figure 14. Illustration of wide box and single file crowding alleys.

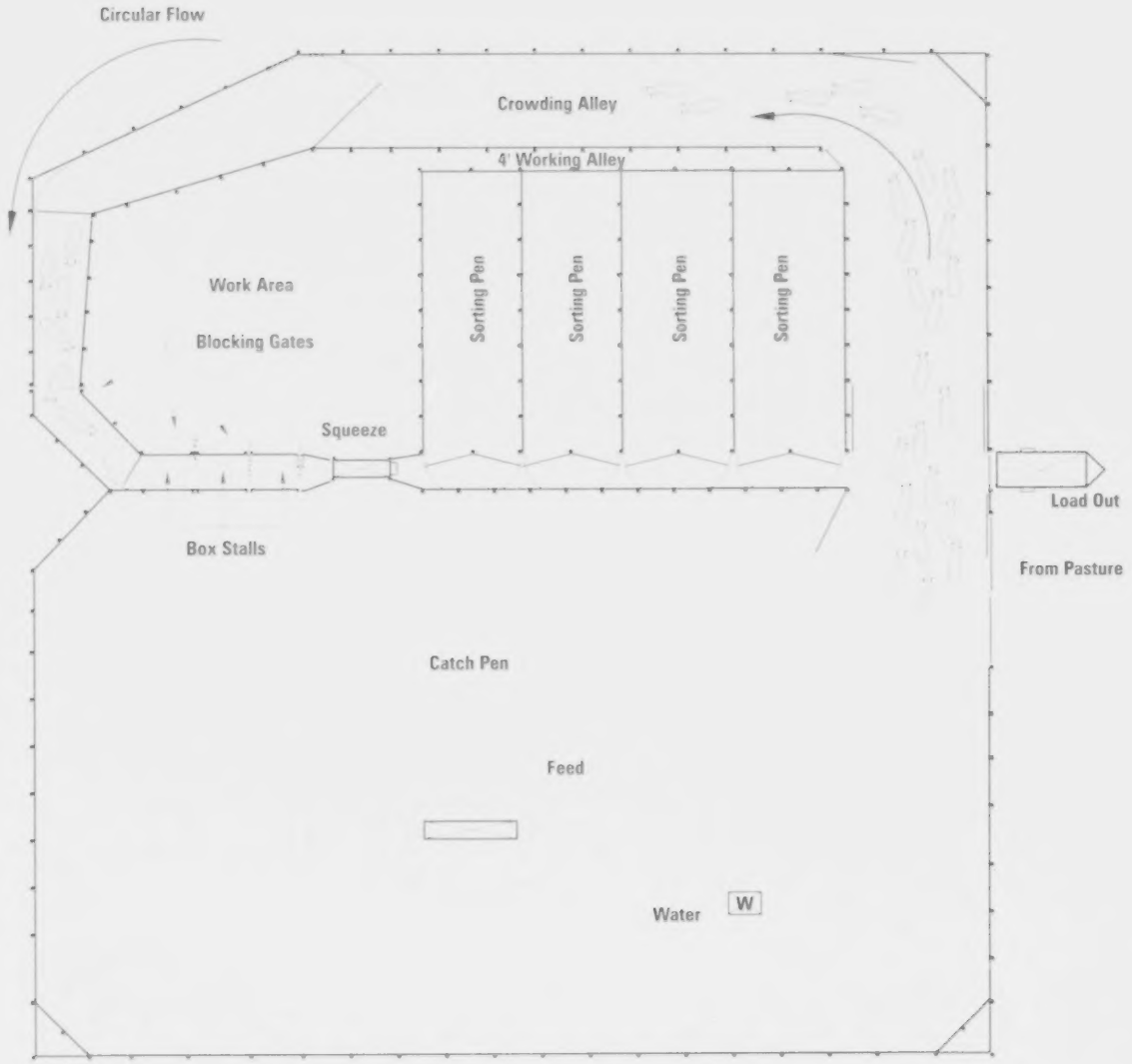


Figure 15. A crowding alley.

Squeeze

Bison squeezes are similar in concept to cattle squeezes, but there are differences in bison squeezes that are important.

A crash gate is attached to the front of the squeeze because bison are difficult to catch without it. Their wide horns, narrow shoulders and quickness make it difficult to close the headgate in time, unless a crash gate forces them to stop. Once a bison is caught in the headgate, the crash gate can be swung or lifted out of the way so that you have access to the animal's head. It is important to mention here that the crash gate needs to be used properly to prevent animals from injuring themselves. Avoid giving the animal a long runway into the squeeze. Allow the animal to enter the squeeze from the alley box immediately prior to the squeeze. It is a good idea to let the bison enter the squeeze with the headgate closed. Once the animal is in the squeeze ensure the crash gate is closed, open the headgate and let the animal walk forward and then close the headgate.

They are stronger and sturdier.

They have fewer open areas where a bison can catch a horn or a leg.

They are longer and taller than most cattle squeezes in order to deal with large bulls. Mature bison bulls can be quite tall and long, and will balk if the squeeze is too small.

Facilities can be made quieter by caulking the metal welds with silicone to reduce the vibrations.

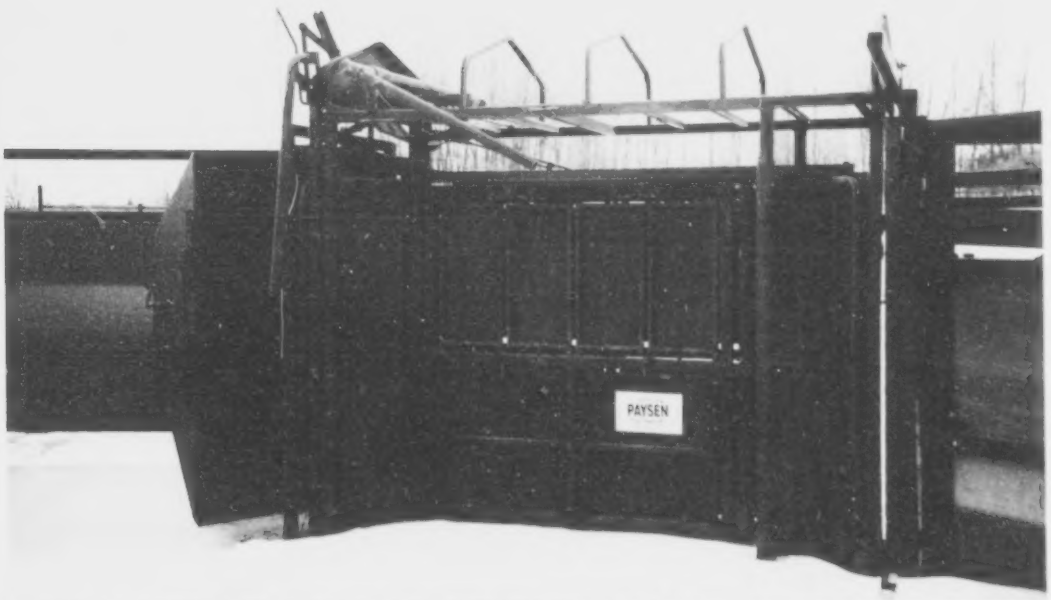


Figure 16. Bison squeeze with a side-swing crash gate.

Scale (optional)

Some produces choose to put a scale in their handling facility. It is a useful tool in the management of bison. It can be placed under the squeeze or in a separate compartment, immediately behind the squeeze.

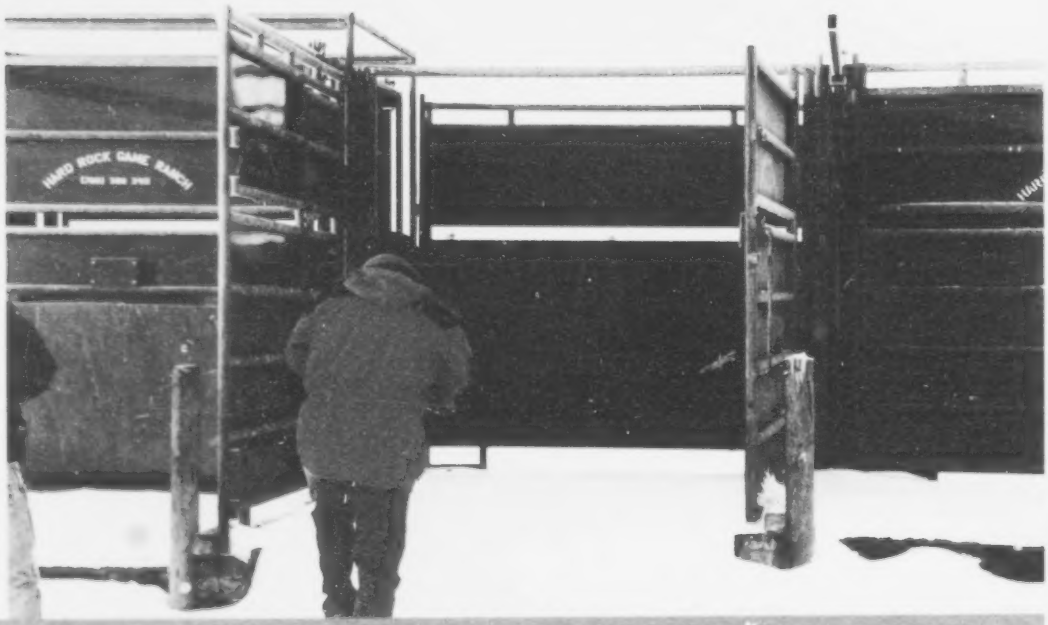
Load Out

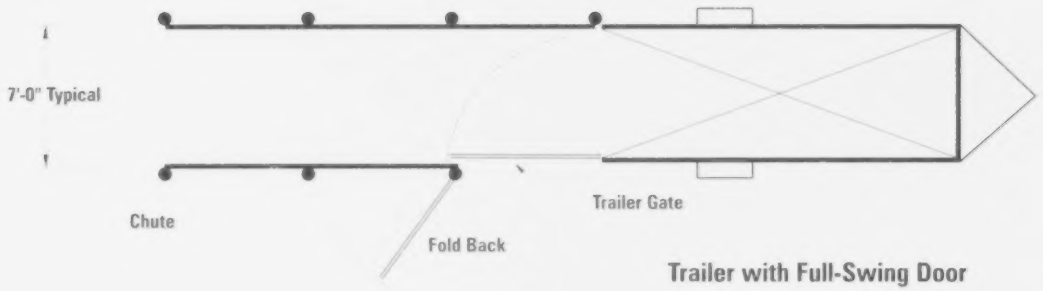
The location of the load out depends on where you can sort animals in your handling facility. It can be located off the crowding tub or alley, as an alternative to entering the squeeze. Putting a curve or angle in the chute helps reduce balking when animals see the trailer or truck ahead.

Bison can be loaded into a stock trailer from a wide alley using the swinging back door of a livestock trailer, or from a single file alley by using the half-door slider.

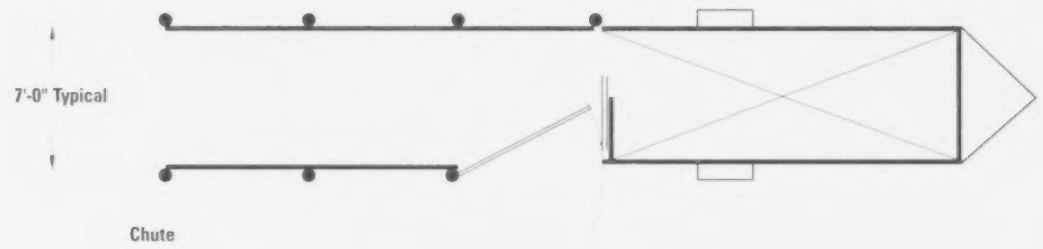
Bison load easily into a stock trailer from the ground, but loading bison onto to a semi-trailer requires a loading ramp.

Figure 17. This shows a load out onto a livestock trailer from a wide box alley seciton.





Trailer with Full-Swing Door



Trailer with 36" Door

Facility Components | **Figure 18.** Illustrations of load outs for livestock trailers.

Sorting Pens

Well-designed bison facilities include pens to sort bison into after they leave the squeeze. These pens are used to sort the herd as desired. They should be situated close enough to the release point of the squeeze so it is convenient for the operator to get to the gate. They should also be designed to allow the bison to settle down after being handled. This can be accomplished by:

- locating the sorting pens far enough from the squeeze that they are outside the bison's flight zone
- placing visual barriers between the squeeze and the sorting pen so that bison are not frightened by human activity
- not holding bison individually in the pen for long periods of time, as they settle down in a group much quicker than if left alone

Pen Size

The pen needs to be large enough for bison to feel at ease. The size is going to depend on how many bison need to be accommodated. Table 2. provides suggested space allowances for various types of animals. Based on your operation, it is recommended that you have enough sorting pen space to accommodate all the animals in your herd.

Table 2. Suggested minimum space allowances for sorting pens for bison (ft^2/unit)

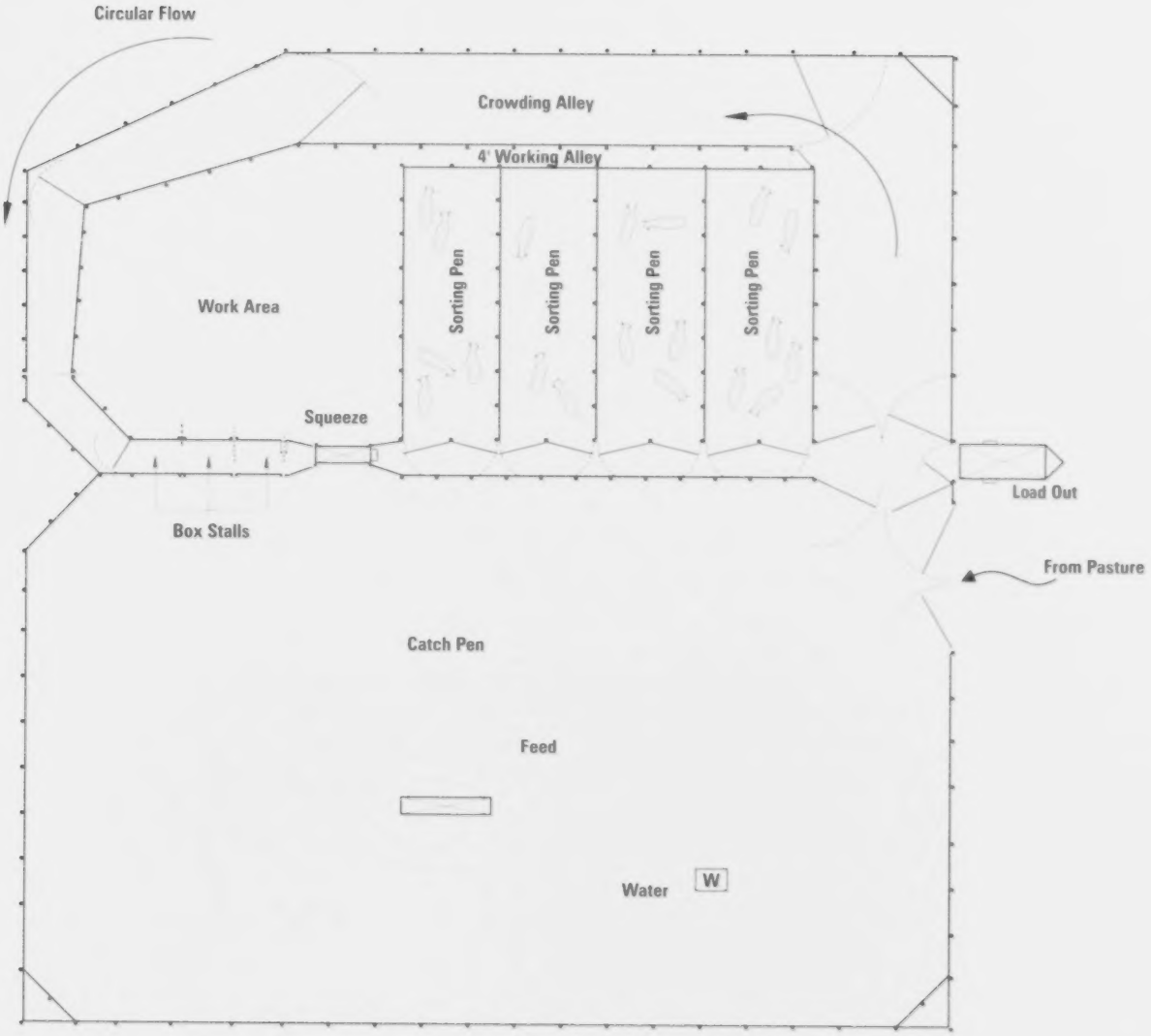
Animals	Sorting Pen
Cow/Calf pairs	60 square feet
Mature cows	40 square feet
Yearlings	25 square feet
Calves	15 square feet

Pen Shape

Depending on topography and facility set-up, pens can either be square or rectangular. If you are cutting bison out a group in a sorting pen, it is easier to move them out of a rectangular pen than a square one. Some producers set their pens at an angle to create a fishbone design to allow for ease of animal movement. However, it is important that sorting pens do not become too narrow as this can hinder movement within the pen.

Gate Location

It is a good idea to have two gates on each sorting pen: one for entering and one for leaving. Depending on the design of the facility, there can be one on each end of the pen or two on one end. Gates should be situated to allow easy animal movement both into and out of the pen.



Facility Components **Figure 19** Sorting pens.

Designing a Facility

Animal Flow

Bison should move through a properly designed handling facility with very little effort. Understanding the basic instincts and natural tendencies of bison can be used to construct facilities where a little pressure will achieve the desired results. Some people say that bison should flow through a facility like water. If you can visualize water flowing through a facility, it should flow smoothly with very little turbulence. Those areas where water would not flow smoothly are likely be problem areas for bison. Design features to incorporate, include:

- avoiding sharp turns
- avoiding square corners
- pens that taper at the gates
- gradually reduced alleys, instead of ones that have abrupt changes

Fence Design

There are several designs of fence that can be used. They include a woven wire fence (also called farm fence, page wire, paige wire, square mess and wire mess fence), open plank or pipe fence, solid plank, and a combination of open and solid walls.

- **Woven Wire**

  Woven wire fence is used in areas where there is no pressure on the bison. The large catch pen and alleys that connect pens can be made of wire. Any pen or alley where pressure is going to be put on the bison should be constructed of more robust materials, like metal or wood.

Under situations where bison are given very little pressure, visual barriers can be used to decrease the chance of bison running into a fence. They can also be used to block the view of areas with high activity. The type of materials commonly used for visual barriers include: special game farm barrier fabric, snow fencing, tarps, plywood and conveyor belting.

- ## Open Plank or Pipe Fence

Open plank or pipe fence is good for areas away from the main working area, where a moderate amount of pressure is placed on the bison. Some areas of the catch pen and sorting pen can be made using this style of fence. Keep the planks far enough apart to fit winter boots, so that you can climb over if necessary, but close enough together so that the bison can't get their heads caught between them. As the bison get closer to the squeeze and more pressure is exerted on them, a more closed design is preferred. Bison are less likely to catch their horns, heads or legs in the openings and it blocks the view of the handlers. This tends to make them feel safer and it calms them down.

Figure 20. Woven wire fence is appropriate for areas of low to medium animal pressure.

Figure 21. Open plank fence. It is important to place the planks close enough together to prevent animals from getting their heads or legs through, but far enough apart so operators can fit the toes of a winter boot between the planks.

Figure 22. Pipe fence with a visual barrier added. The barrier prevents smaller animals from getting their heads through the fence.

- **Combination of Open and Solid Walls**

  A solid bottom and open-railed top design allows the handler to work from the ground and it eliminates the need for catwalks. The bison's view of the handler is obstructed most of the time because the lower portion of the fence is solid. Remember, a bison carries its head quite low to the ground. The handler can calm the bison by stepping back from the fence or apply some pressure by stepping closer to the fence and appearing over top of the solid portion. This design is gaining popularity because it is relatively simple and inexpensive to build.

- **Solid Walls**

  Completely solid walls have the advantage of blocking the animal's view of the handlers. However, they also block the handler's view of the bison. In order to use this design, the handler must get into the pen, which is often unsafe, or work with the bison over the fence by standing on a catwalk. This type of system is more expensive to build than the open rail fence or the solid bottom fence.

  There are very few areas in a bison handling facility that require completely solid walls. Bison feel more comfortable when they are able to see other animals in other areas of the handling facility.

Figure 23. A combination of an open and solid wall fence made with portable panels. Portable panels can be effective for building parts of a facility as they allow for making changes.

Figure 24 and 25. Solid wall fences. The top photo shows planks with visual barriers. The bottom photo shows a solid plank fence.

Photo courtesy of Beaver Creek Wood Bison Ranch

Fence Height

Areas of higher pressure require higher fences. Bison can be good jumpers and they will sometimes climb on the back of another animal to jump over a fence.

The height requirements usually go up as you get closer to the squeeze. Fence height recommendations are:

catch pen – five to six feet

cutting pens – six to seven feet

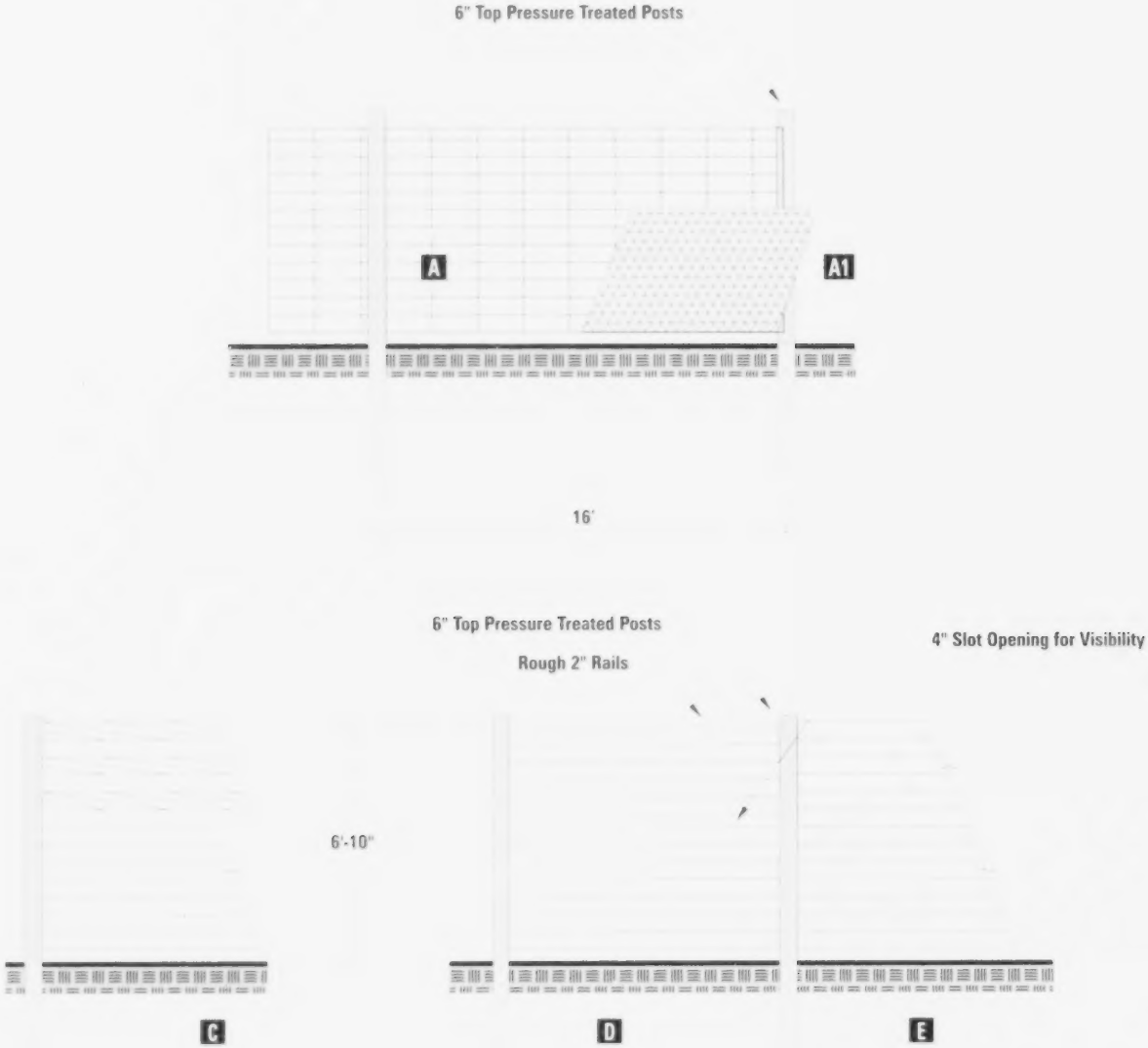
crowding alleys and sorting pens – seven feet

Building Materials

Wood and metal are both good construction materials for bison handling facilities. The advantages of metal are that it is stronger and usually lasts longer. The advantage of wood is that it has some flexibility and is a little more forgiving if an animal hits the fence. The decision between metal and wood construction materials is usually based on price of the materials and personal preference: whether you are a carpenter or a welder.

Rubber belting is another option. Discarded rubber belting from mines has been used by many bison farmers for the construction of their handling facilities. Belting comes in different widths (three, four and six feet) and any length that you want. Rubber belting is extremely strong and rugged, and it is a very good fence material. Unfortunately, it is becoming harder to find as mines are using less of this type of belting in recent years.

Figure 26. Rubber belting fence. Discarded industrial belting is very durable and flexible enough to prevent animal injuries. However, belting can be difficult to work with.



A Woven wire 5'-0" high, posts 12' to 16'

A1 Woven wire with visual barrier added

B Plank or pipe rail fence (see next page)

A Solid plank bottom 4'-0", open rail top 3'-0"

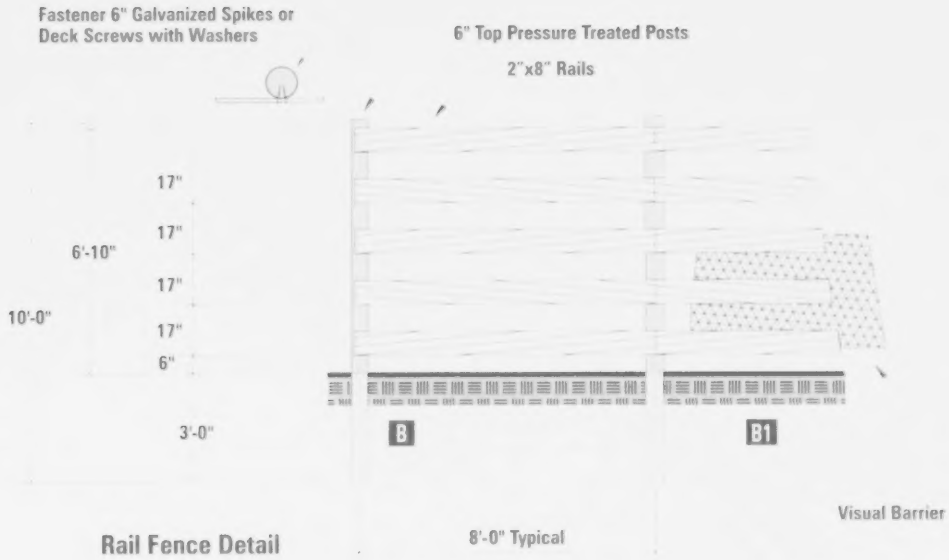
D 7' solid plank sides, slit at 4'-0"

E 7' solid plank

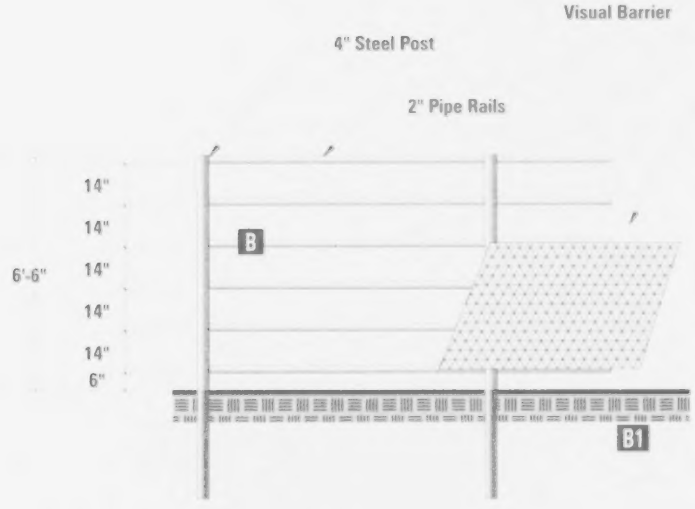
Notes: Post spacing is 8'-0" from main line fences within handling facility and 6'-0" fro congested areas such as chutes and alleys.

Facility Components

Figure 27. Fencing options.



Rail Fence Detail



Steel Pipe Option

Note: *This is a popular option if you have easy access to used steel pipe*

B Plank or pipe rail 7'-0" high

B1 Plank or pipe (Type B) with visual barrier

Notes: Post spacing is 8'-0" from main line fences and 6'-0" for congested areas such as chutes and alleys

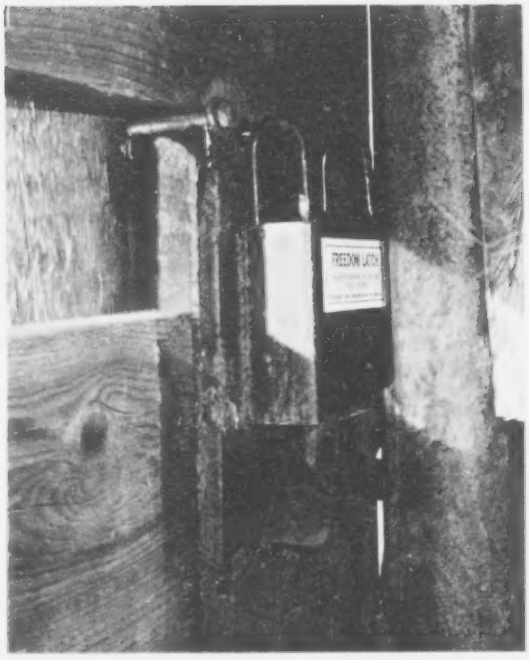
Figure 28. Fencing options.

Gate Latches

To be effective in a bison handling facility, gate latches need to be strong, self-catching and safe.

Self-catching latches are important for handler safety because swinging gates are usually closed from the outside of the alley. It eliminates the need for you to be inside a confined space with the bison.

Latches need to be designed so that there are no sharp edges that catch or snag the bison as they are running past. Latches should be built with smooth edges and designed to minimize the risk of injury.



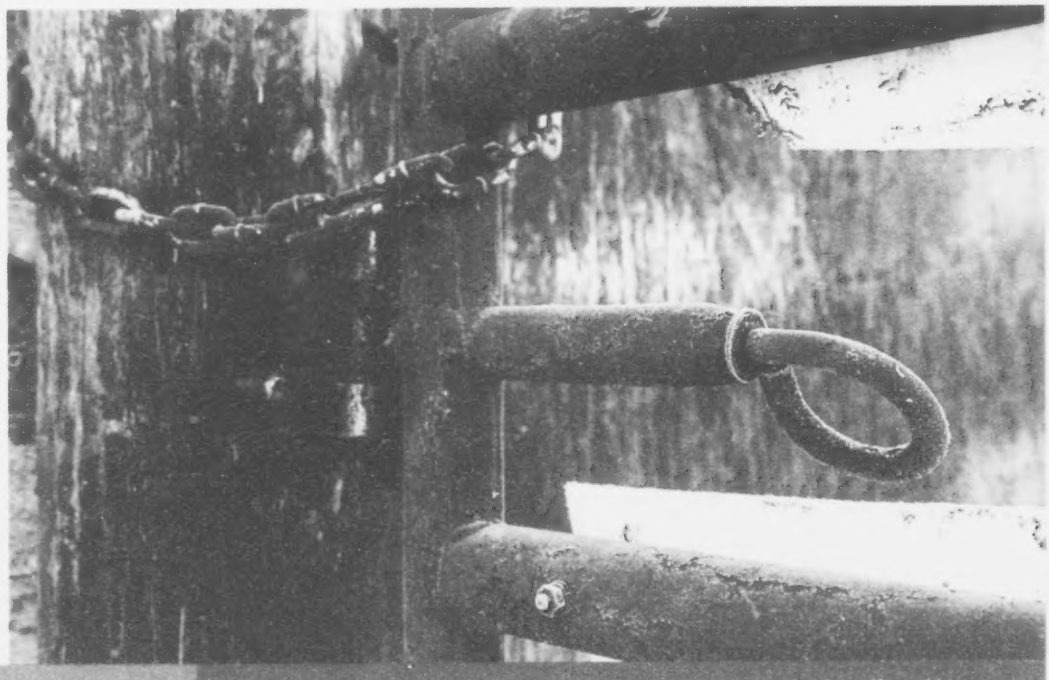


Figure 29 and 30. Gate latches. In a handling facility latches need to be self-catching with a spring-loaded latch (top) or pin (bottom).

Portable vs. Permanent

A recent trend in handling facility design is to make a portion of the facility portable. The larger catch pens and cutting pens are made with permanent posts and fences, but the crowding alleys, squeeze and sorting pens can be portable. The advantages of a portable system are:

- redesign is easy if you discover a problem area where the animals do not want to move through the system
- expansion is easy because you can add more space to accommodate a larger herd
- more than one herd can use the same system by taking down the system and moving it to a new location
- portable bison panels are commercially available or can be built yourself

Enclosed Working Area

Some producers build a shelter over their squeeze. This is done for the comfort of the workers and to protect the equipment from deterioration due to weather.

The entrance to the enclosed area should be large and well lit. Remember, bison may not want to enter areas with low lighting.

Open sided sheds work well. There is lots of natural daylight and the overhead shelter protects against shadows.

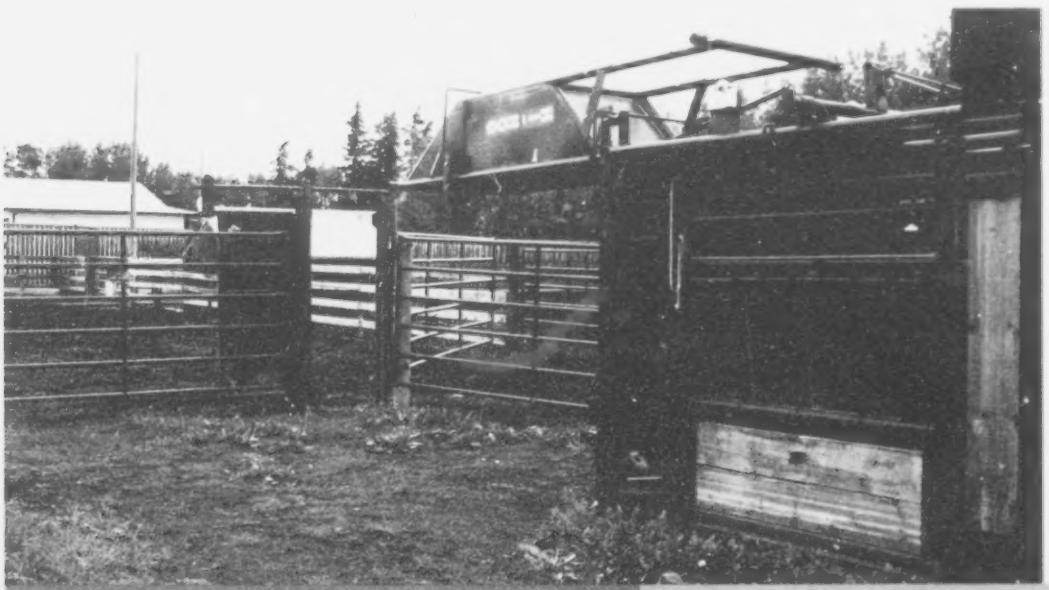


Figure 31. Bison squeeze with a top-swing crash gate.

Horned vs. Dehorned Bison

Bison are naturally horned animals. Both sexes have horns and they are used for protection and in some instances, aggression. When bison are crowded and stressed, they often lash out at each other. Younger and smaller animals are at risk of being injured or killed by older, stronger animals.

Herd bulls and older dominant cows are the most likely to use their horns aggressively towards others. Some bison producers remove the horns from their cows to reduce the incidence of injuries during handling. Dehorned bison are less likely to seriously injure or kill others in the herd.

Producers with horned bison should handle them differently in order to reduce the chance of injury. When handling horned bison it is important to:

- not crowd them excessively
- not mix unfamiliar bison in a handling facility
- reduce the herd into smaller groups as soon as possible once they are in the crowding alley

Remove herd bulls and older dominant cows early in the handling process to reduce aggressive behaviour towards other animals, especially younger ones.

Site Selection

There are several issues to consider when choosing the site of your handling facility. These include:

- hills – choose a level area for ease of construction and working around the facility
- water drainage – don't build your facility where water will collect and cause a problem
- shadows – consider where the sun will be when you are most likely to handle your bison, and take shadows and bison's fear of them into consideration when laying out your plan
- prevailing winds – worker comfort and drifting snow are both considerations

Laying Out Your Plan

When making your plan for your handling facility, it is a good idea to put your ideas down on paper and then have somebody with bison experience examine them. Changes are a lot easier to make on paper, before the posts are in the ground. Once you have carefully planned out your facility, mark off the area where you plan to build. Use stakes or surveyor's flags to mark out your design. Does it still make sense to use the area that you have chosen? If so, proceed with building. If not, make the changes before proceeding.

Plan for Expansion

Bison producers are often encouraged to "think big, but start small." If you are going to start a small herd of bison, design your facility so that it can easily be expanded if you decide that you want to acquire more animals.

The main working area (crowding alley, squeeze and load out) is basically the same for both a small and a large herd. A large herd requires more space in the catch pen. It also requires larger or more sorting pens to hold all of the animals.

Ground Surfaces

Choosing a non-slip surface for your crowding alley and squeeze area is important as slippery surfaces may make bison panic and hard to handle. Poor footing also increases the chance of injury. There are a few surfaces that help improve footing.

Packed gravel is one of the better choices. It does not get muddy when it rains and provides good traction in the winter.

Concrete is sometimes used under a squeeze and crowding alley. The disadvantages of this choice are it is more expensive, it can be slippery unless it is finished with a rough surface and bison may balk if they sense that the footing is too different than what they are used to.

Dirt surfaces tend to become muddy and slippery in wet conditions. Also, over time they tend to develop deep ruts and holes in high traffic areas.

When working in the winter, ice may be a problem. Covering it with sand is good way to improve the footing.

Safety Features to Build Into Your Facility

It is important to build safety features into your handling facility. Listed below are several features that can make your facility safe. These include:

- safety gates in areas where you will be working on the ground inside a pen
- toe slots and grab rails in areas where you might need to get over a fence in a hurry
- safety islands in the centre of large pens so that you are never far from safety
- animal releases in the crowding alley so that an animal can be removed if it becomes stuck or stubborn, and can't or won't move
- self-catching latches on gates so that gates can be pushed closed from outside of the pen

Figure 32. Safety islands shown in a large handling facility.

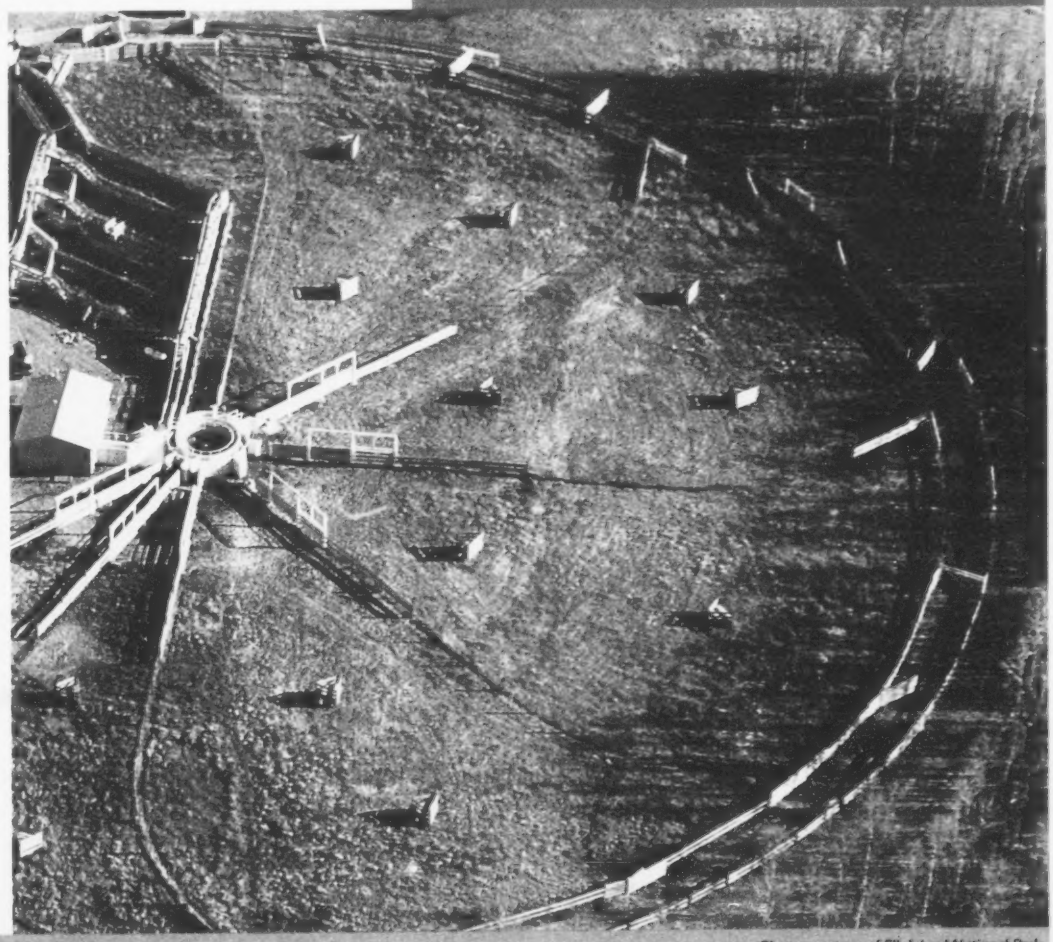


Photo courtesy of Elk Island National Park

Emergency Access to Injured or Stubborn Animals

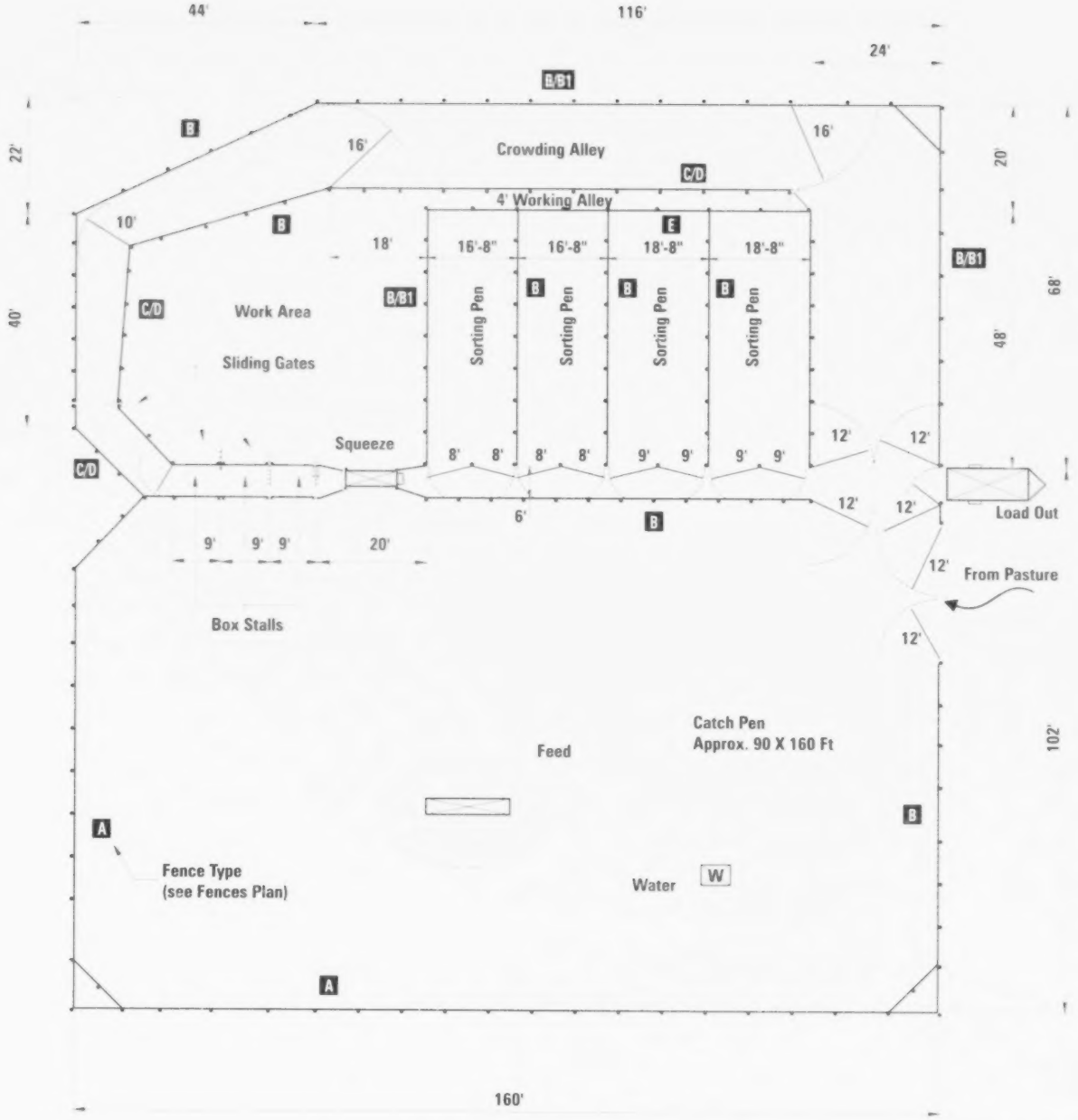
Another consideration when designing your facility is how you are going to deal with an injured bison. If an animal becomes unable to walk while in your squeeze or crowding alley, how are you going to deal with it? You should be able to access the animal with gates or release panels.

This is also a consideration when dealing with animals that refuse to proceed up the crowding alley into the squeeze. By building in release points you can bypass the squeeze to get the problem animal out of the way of others in the group.

Handling Facility Plans

In this section of the book you will find four examples of bison handling facility plans, complete with measurements. All four plans contain the basic components discussed in the previous chapter. However, the components are put together in slightly different ways due to the herd size each facility is to accommodate. A list of the approximate amount of materials needed to build the facility is included for each plan. These plans are intended to provide ideas for building a bison handling facility. It is highly recommended that in addition to using these plans, you visit existing facilities and talk with producers when designing your facility.

Figure 33. A crowding alley leading to a squeeze.



Key Features of Plan A

- the catch pen can be used as a cutting pen for larger herds
- easily scaled down to accommodate small herds
- to enter the crowding alley, bison return to the same corner where they entered from the pasture

Bison Handling Facility

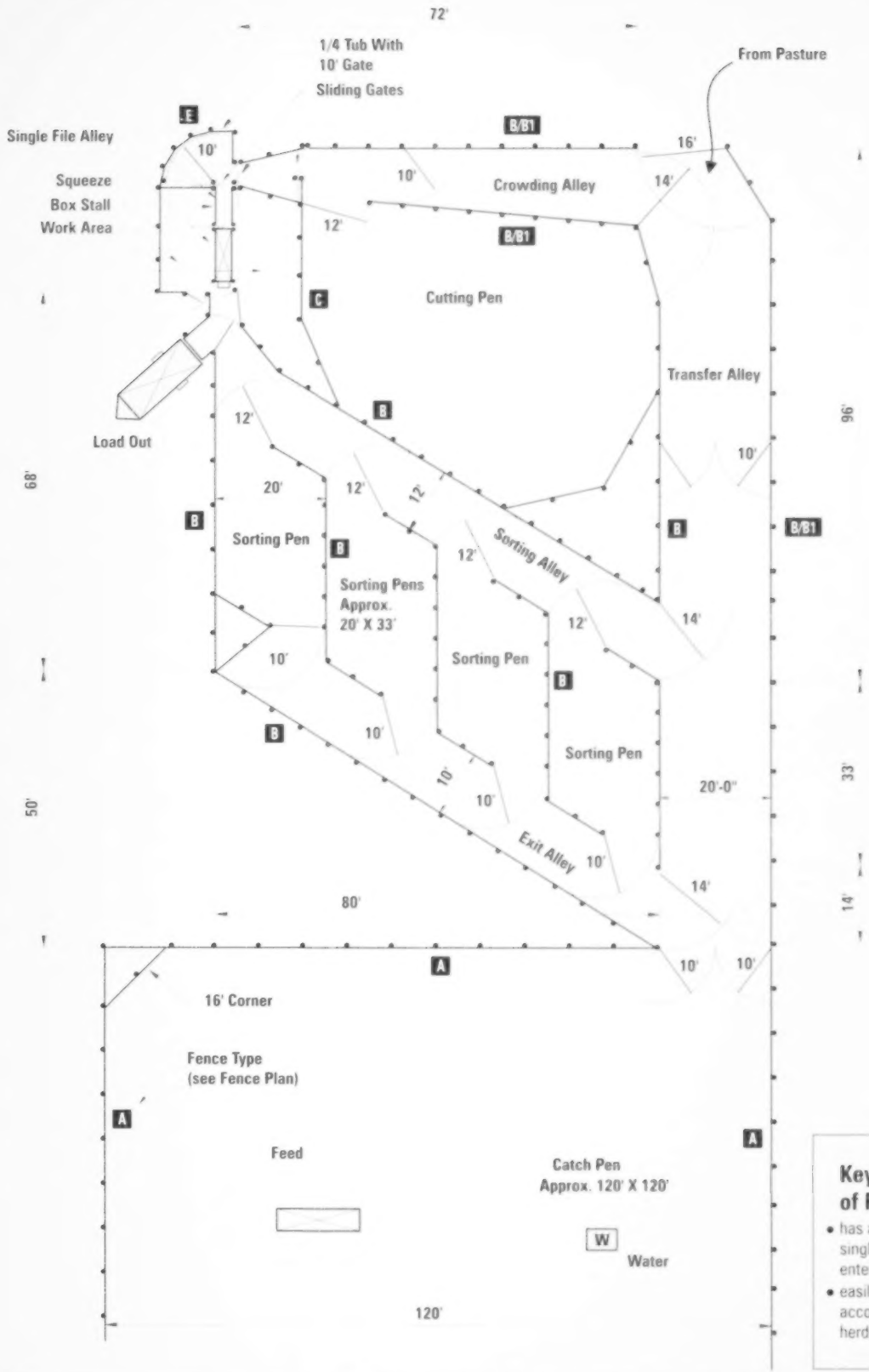
Plan A. Herd size of 40 - 60 cow/calf pairs.

List of Materials (approximate)

This list is based on the facility in Plan A and is only an estimate of materials needed. However, this list should help you in calculating an approximate cost of the facility in the related diagram.

Plan A

(A) For main corral		
Posts	6" tops; pressure treated; 10' long	185
	6" to 8" dia. steel gate posts; 10' long	6
Planks	2" x 8" x 16'; rough; (fence Type B/B1)	1,744 lineal feet
	2" x 8" x 12'; rough; (fence Type B/B1)	1,560 lineal feet
	2" x 6" x 16'; rough; (fence Type C/D)	864 lineal feet
	2" x 6" x 12'; rough; (fence Type C/D)	1,236 lineal feet
	2" x 6" x 16'; rough; (fence Type E)	928 lineal feet
Game fence	(woven wire); (fence Type A)	234 lineal feet
Gates (with hardware)	Man-gates	1 @ 5'
		4 @ 5' 6"
	Sliding gates (including rail and rollers)	1 @ 8'
	Swing gates	2 @ 6'
		4 @ 8'
		4 @ 9'
		1 @ 10'
		6 @ 12'
		2 @ 16'
Fasteners	Nails (5" ardox) **or**	145 pounds
	Lag screws (4" x 1/4" c/w washer)	2,750
	Staples (for fence Type A)	5 pounds
(B) For home-made box stalls (3)		
Posts	6" tops; pressure treated; 10' long	21
Planks	2" x 6" x 10'; rough; (fence Type E)	780 lineal feet
Sliding gates	(including rail and rollers)	3
Fasteners	Nails (5" ardox) **or**	28 pounds
	Lag screws (4" x 1/4" c/w washer)	750
Squeeze		1
Optional	Visual barrier (e.g. snow fence)	900 lineal feet
	Scale	1



Key Features of Plan B

- has a quarter-tub and single file alley before entering the squeeze
- easily scaled down to accommodate small herds

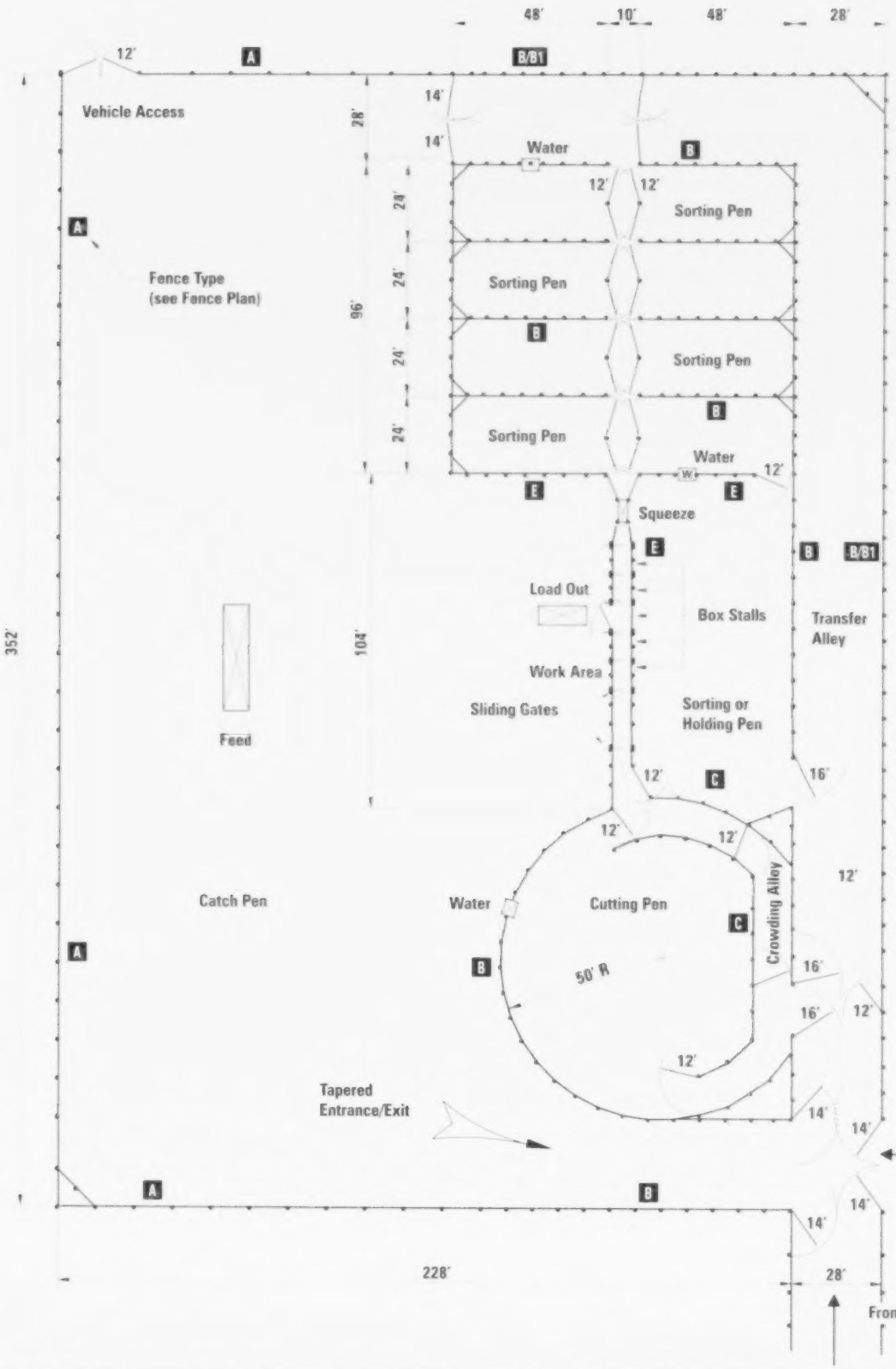
Bison Handling Facility | **Plan B**. Herd size of 30 - 50 cow/calf pairs.

List of Materials (approximate)

This list is based on the facility in Plan B and is only an estimate of materials needed. However, this list should help you in calculating an approximate cost of the facility in the related diagram.

Plan B

(A) For main corral		
Posts	6" tops; pressure treated; 10' long	220
Planks	2" x 8" x 16'; rough; (fence Type B/B1)	1,904 lineal feet
	2" x 8" x 12'; rough; (fence Type B/B1)	2,508 lineal feet
	2" x 6" x 12'; rough; (fence Type E)	1,032 lineal feet
Game fence	(woven wire); (fence Type A)	460 lineal feet
Gates	Man-gates	1 @ 3'
(with hardware)	Small sorting gates	2 @ 6'
	Sliding gates (including rail and rollers)	1 @ 10'
	Swing gates	6 @ 10'
		9 @ 12'
		3 @ 14'
		1 @ 16'
Fasteners	Nails (5" ardox) **or**	170 pounds
	Lag screws (4" x 1/4" c/w washer)	2,840
	Staples (for fence Type A)	9 pounds
(B) For home-made box stalls (1)		
Posts	6" tops; pressure treated; 10' long	10
Planks	2" x 6" x 10'; rough; (fence Type E)	208 lineal feet
Sliding gates	(including rail and rollers)	2 @ 4'
Fasteners	Nails (5" ardox) **or**	9 pounds
	Lag screws (4" x 1/4" c/w washer)	210
Squeeze		1
Optional	Visual barrier (e.g. snow fence)	680 lineal feet
	Scale	1



Key Features of Plan C

- designed to handle several large herds
- has a round cutting pen
- the transfer alley can hold a large number of animals
- incorporates a wide box alley design

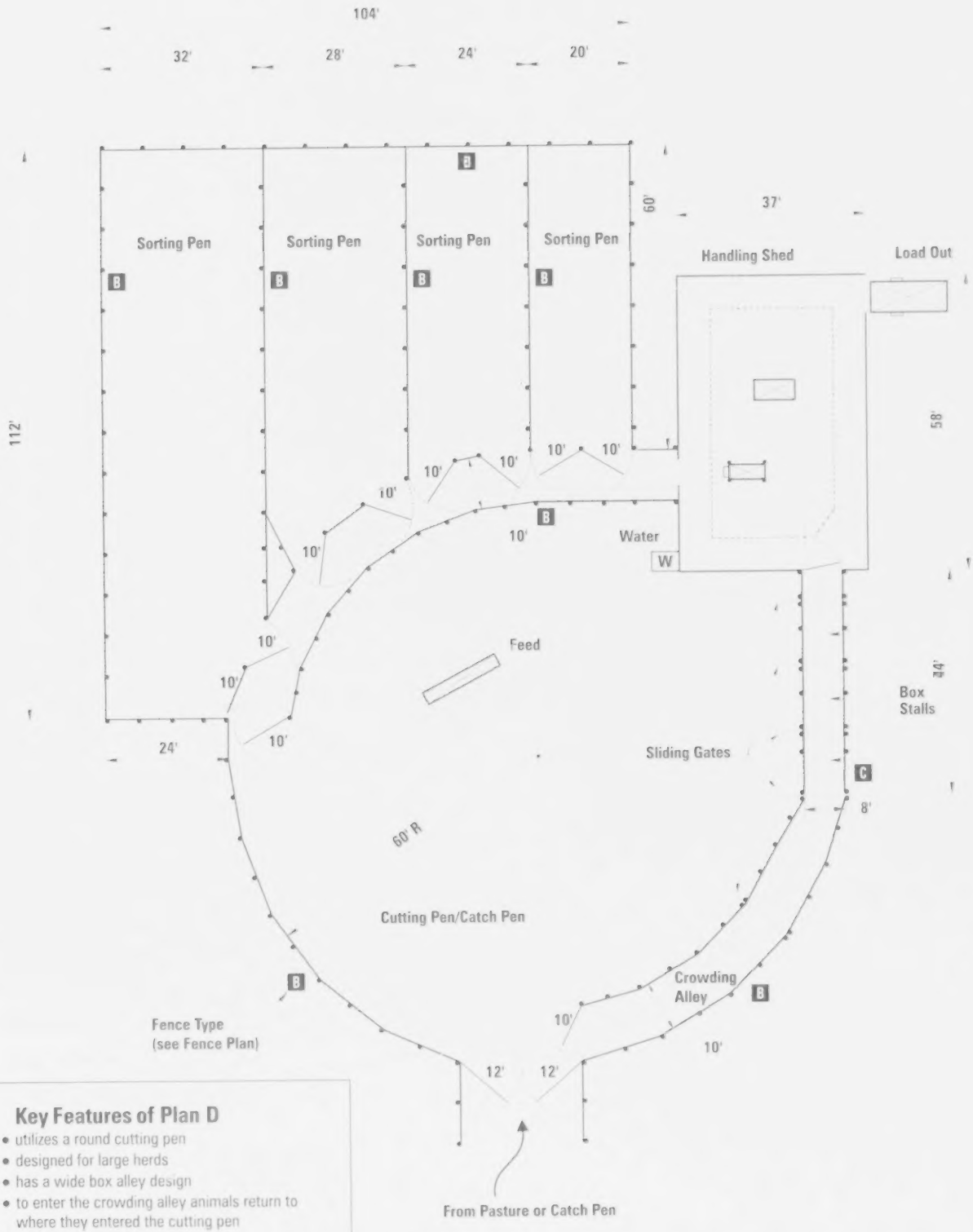
Bison Handling Facility | **Plan C.** Herd size 150 + cow/calf pairs.

List of Materials (approximate)

This list is based on the facility in Plan C and is only an estimate of materials needed. However, this list should help you in calculating an approximate cost of the facility in the related diagram.

Plan C

(A) For main corral		
Posts	6" tops; pressure treated; 10' long	349
	6" to 8" dia. steel gate posts; 10' long	8
Planks	2" x 8" x 16'; rough; (fence Type B/B1)	4,704 lineal feet
	2" x 8" x 12'; rough; (fence Type B/B1)	3,360 lineal feet
	2" x 6" x 12'; rough; (fence Type C/D)	2,604 lineal feet
	2" x 6" x 12'; rough; (fence Type E)	1,872 lineal feet
Game fence	(woven wire); (fence Type A)	592 lineal feet
Gates	Man-gates	4 @ 5' 6"
(with hardware)	Sliding gates (including rail and rollers)	1 @ 6'
	Others	24 @ 12'
		8 @ 14'
		4 @ 16'
Fasteners	Nails (5" ardox) **or**	285 pounds
	Lag screws (4" x 1/4" c/w washer)	5,000
	Staples (for fence Type A)	10 pounds
(B) For home-made box stalls (5)		
Posts	6" tops; pressure treated; 10' long	38
Planks	2" x 6" x 10'; rough; (fence Type E)	1,236 lineal feet
Blocking gates	(including rail and rollers)	6 @ 6'
Fasteners	Nails (5" ardox) **or**	50 pounds
	Lag screws (4" x 1/4" c/w washer)	1,248
Squeeze		1
Optional	Visual barrier (e.g. snow fence)	900 lineal feet
	Scale	1



Key Features of Plan D

- utilizes a round cutting pen
- designed for large herds
- has a wide box alley design
- to enter the crowding alley animals return to where they entered the cutting pen

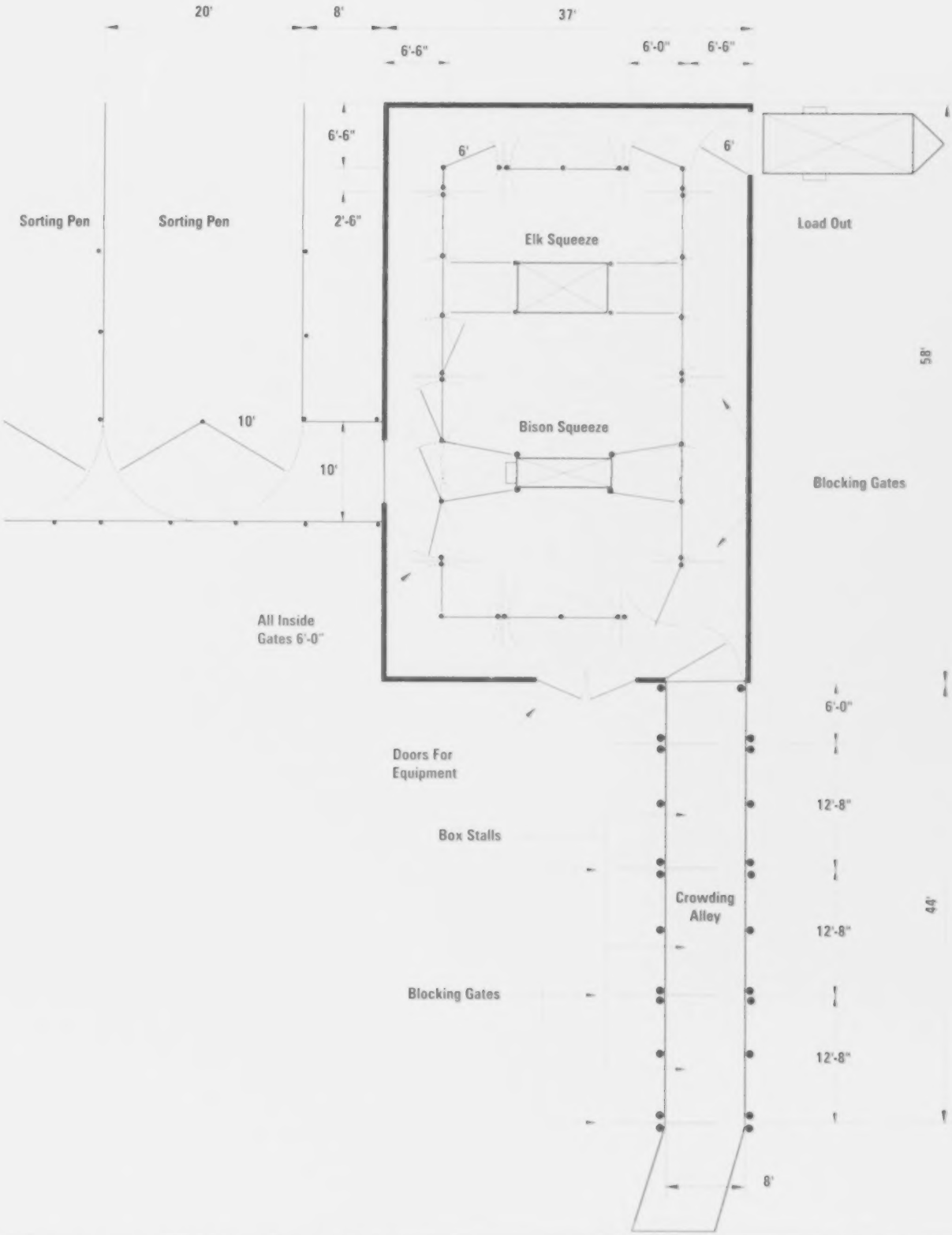
Bison Handling Facility | **Plan D. Herd size 60 + cow/calf pairs.**

List of Materials (approximate)

This list is based on the facility in Plan D and is only an estimate of materials needed. However, this list should help you in calculating an approximate cost of the facility in the related diagram.

Plan D (not including shed and internal penning/equipment)

(A) For main corral		
Posts	6" tops; pressure treated; 10' long	130
	6" to 8" dia. steel gate posts; 10' long	2
Planks	2" x 8" x 16'; rough; (fence Type B/B1)	3,472 lineal feet
	2" x 8" x 12'; rough; (fence Type B/B1)	840 lineal feet
Gates	Man-gates	1 @ 4'
(with hardware)	Sliding gates (including rail and rollers)	1 @ 10'
	Swing gates	10 @ 10'
		2 @ 12'
Fasteners	Nails (5" ardox) **or**	120 pounds
	Lag screws (4" x 1/4" c/w washer)	1,850
(B) For home-made box stalls (3 large external)		
Posts	6" tops; pressure treated; 10' long	22
Planks	2" x 6" x 10'; rough; (fence Type E)	804 lineal feet
Blocking gates	(including rail and rollers)	4 @ 8'
Fasteners	Nails (5" ardox) **or**	25 pounds
	Lag screws (4" x 1/4" c/w washer)	630
Squeeze		1
Optional	Scale	1



Bison Handling Facility

Plan D (detail). Additional information about the handling shed.

Resources

- *Handling Bison – Safely and Effectively*, VHS video available from Alberta Agriculture, Food and Rural Development at: www.agric.gov.ab.ca/publications
- Websites with more information include:

  www.bisoncentre.com

  www.pami.ca

  www.grandin.com

  www.bisoncentral.com

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AGRICULTURE, FOOD AND
RURAL DEVELOPMENT
AGDEX 492/723-1

Printed in Canada